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Report of the Governor of New Mexico to the Secretary of the ...

New Mexico. Governor, United States. Dept. of the Interior

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FROM THE

UNITED STATES GOVERNMENT

THROUGH

Dept. of Interior

9 Feb. 1899 - 26 Jan. 1900

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REPORT

OF THE

GOVERNOR OF NEW MEXICO

TO THE

SECRETARY OF THE INTERIOR

FOR THE

FISCAL YEAR ENDED JUNE 30, 1898.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1898.

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REPORT

OF THE

GOVERNOR OF NEW MEXICO FOR THE YEAR ENDING JUNE 30, 1898.

SANTA FE, N. MEX., *October 1, 1898.*

SIR: In obedience to your request, I have the honor to herewith transmit to you my report of the Territory of New Mexico for the year ending June 30, 1898, showing the progress and development of our Territory during that period.

I desire to call special attention to the following subjects contained in my report: Statehood, cattle, sheep, and wool; remarks concerning the old adobe palace at Santa Fe; irrigation, population, increased valuations, sugar-beet culture, appropriations, and New Mexico's war record.

Referring again to the above subjects, I wish to call your particular attention to the report on irrigation gotten up by Mr. P. E. Harroun, C. E. This report has taken considerable time and attention, and is worthy of more than a passing consideration, irrigation being a most important factor in our Territory.

I have the honor to be, sir, your most obedient servant,

MIGUEL A. OTERO,
Governor of Territory of New Mexico.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

NEW MEXICO.

The Territory of New Mexico has an average breadth of 335 miles; length of eastern boundary, 345 miles; length of western boundary, 390 miles.

By geographical divisions New Mexico is bounded on the north by the State of Colorado, on the east by the public domain and the State of Texas, on the south by the State of Texas and the Mexican States of Chihuahua and Sonora, and on the west by the Territory of Arizona.

Of the 123,000 square miles, or nearly 79,000,000 acres, there are about 24,000,000 acres contained in land grants, Indian and military reservations, railroad grants, and Government entries, which leaves an available area of about 55,000,000 acres of land, capable of supporting a population of several millions of people.

Should Congress see fit to admit New Mexico into the union of the States, she will be the fourth in area.

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The Territory of New Mexico is rich in everything that constitutes the wealth of nations—iron, coal, lead, silver, gold, mica, limestone, sandstone, marble, gypsum, soda, fireclay, etc., in endless varieties and inexhaustible quantities.

OFFICIAL REGISTER.

Territorial officers.—Governor of the Territory of New Mexico, Miguel A. Otero, Las Vegas, N. Mex.; private secretary to governor, Miss N. P. Crane, Santa Fe, N. Mex.; secretary of the Territory, George H. Wallace; clerk in secretary's office, C. P. Wallace; solicitor-general, Edward L. Bartlett; auditor, Marcelino Garcia; treasurer, Samuel Eldodt; superintendent of Territorial penitentiary, Edward H. Bergmann; superintendent public instruction, Manuel C. de Baca; librarian, Jose Segura; adjutant-general, William H. Whiteman; mine inspector, J. W. Fleming; coal-oil inspector, John S. Clark.

Judiciary.—Chief justice of the supreme court and judge of the fourth judicial district, William J. Mills; clerk, Secundino Romero; clerk of the supreme court, Jose D. Sena. Associate justices of the supreme court: First judicial district, John R. McFie; clerk, A. M. Bergere. Judge second district, J. W. Crumpacker; clerk, H. P. Owen. Judge third judicial district, Frank W. Parker; clerk, J. P. Mitchell. Judge of the fifth judicial district, Charles Leland; clerk, John E. Griffith.

Delegate in Congress.—H. B. Fergusson.

Surveyor-general.—Quinby Vance.

United States revenue collector.—A. L. Morrison.

United States district attorney.—W. B. Childers.

United States marshal.—C. M. Foraker.

Deputy United States marshal.—C. A. Coddington.

Registers and receivers, land offices.—M. R. Otero, register, and Edward F. Hobart, receiver, Santa Fe, N. Mex.; Emile Solignac, register, and H. D. Bowman, receiver, Las Cruces, N. Mex.; Howard Leland, register, and George R. Guyer, receiver, Roswell, N. Mex.; Edward Fox, register, and A. W. Thompson, receiver, Folsom, N. Mex.

District attorneys.—Charles A. Spiess, Santa Fe; John D. Bryan, Las Cruces; T. A. Finical, Albuquerque; T. S. Heflin, Silver City; L. C. Fort, Las Vegas; John Franklin, Roswell; S. Alexander, Socorro; J. Leahy, Raton; E. W. Hulbert, Lincoln, N. Mex.

Public printer.—J. D. Hughes.

Indian agent.—N. S. Walpole.

Court of Private Land Claims.—Chief justice, Joseph R. Reed. Justices: W. W. Murray, Henry C. Sluss, Thomas C. Fuller, and Wilber Stone; attorney, Matthew G. Reynolds; clerk, J. H. Reeder.

Officers of Territorial institutions.—The governor and superintendent of public instruction are ex officio members of the board of regents of the following institutions: The University of New Mexico, the New Mexico College of Agriculture and Mechanic Arts, the New Mexico School of Mines, the New Mexico Insane Asylum, and the New Mexico Military Institute.

The University of New Mexico.—Regents: W. B. Childers, Albuquerque; E. S. Stover, Albuquerque; Juan C. Armijo and F. W. Clancy, Albuquerque; H. L. Waldo, Las Vegas, N. Mex.

New Mexico College of Agriculture and Mechanic Arts.—Regents: G. A. Richardson, Roswell; A. A. Jones, Las Vegas; Jacinto Armijo, Las Cruces; P. H. Curran and J. D. Bowman, Las Cruces, N. Mex.

New Mexico Normal School, Silver City.—Regents: J. W. Fleming, Silver City; W. G. Ritch, Engle; J. A. Mahoney, W. A. Hawkins, and Jo. E. Sheridan, Silver City, N. Mex.

New Mexico Normal School, at Las Vegas.—Regents: C. L. Rudolph, Las Vegas; Charles Ilfeld, Las Vegas; M. W. Browne, Las Vegas; Frank Springer, Las Vegas; Rev. George Selby, Las Vegas, N. Mex.

New Mexico School of Mines, Socorro.—Trustees: J. P. McGrorty, Deming; John Y. Hewitt, White Oaks; Juan Jose Baca, Socorro; J. G. Fitch, Socorro; C. T. Brown, Socorro, N. Mex.

New Mexico Military Institute, Roswell.—Regents: Joseph C. Lea, Roswell; Nathan Jaffa, Roswell; J. O. Cameron, Eddy; John W. Poe, Roswell; Robert S. Hamilton, Roswell, N. Mex.

New Mexico Insane Asylum, Las Vegas.—Directors: F. S. Crosson, Raton; M. Brunswick, Las Vegas; J. W. Zollars, Las Vegas; Benigno Romero, Las Vegas; F. H. Pierce, Las Vegas, N. Mex.

Territorial board of education of New Mexico.—Members: Governor; superintendent public instruction; president of St. Michael's College at Santa Fe; president of University of New Mexico; president New Mexico College of Agriculture at Las Cruces, N. Mex.

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Board of penitentiary commissioners.—C. F. Easley, Santa Fe; O. A. Hadley, Watrous; Henry J. Young, Cerro; F. Miera, Miera; S. Baca, Lincoln; J. F. Chavez, Pinos Wells; D. S. Miller, Lake Valley.

Capitol custodian committee.—Secretary of the Territory ex officio, Santa Fe; Manuel Valdez, Santa Fe; Solomon Spiegelberg, Santa Fe.

Territorial board of equalization.—Romulo Martinez, first judicial district, Santa Fe; Thomas Hughes, second judicial district, Albuquerque; D. C. Hobart, third judicial district, Silver City; J. S. Duncan, fourth judicial district, Las Vegas; George L. Ulrick, fifth judicial district, Whiteoaks.

Cattle sanitary board.—J. F. Hinkle, Lower Penasco; W. H. Jack, Silver City; F. J. Otero, Albuquerque; T. E. Mitchell, Clayton; M. N. Chaffin, Las Vegas.

Board of medical examiners.—G. S. Easterday, Albuquerque; W. Eggert, Santa Fe; J. H. Sloan, Santa Fe; Joseph Cunningham, Las Vegas; W. R. Tipton, Las Vegas; C. B. Kohlhausen, Raton; J. W. Kensinger, Roswell.

Board of dental examiners.—J. B. Brady, Santa Fe; F. E. Olney, Las Vegas; L. H. Chamberlin, Albuquerque; W. H. White, Silver City; A. A. Bearup, Roswell.

Members of the board of pharmacy.—A. J. Fischer, Santa Fe; W. C. Porterfield, Silver City; B. Ruppe, Albuquerque; E. G. Murphy, Las Vegas; M. G. Padin, Whiteoaks.

Members of the Bureau of Immigration.—J. D. Hughes, first judicial district, Santa Fe; F. Lowenthal, second judicial district, Albuquerque; W. H. H. Llewellyn, third judicial district, Las Cruces; F. A. Manzanares, fourth judicial district, East Las Vegas; Lucius Dills, fifth judicial district, Roswell, N. Mex.

Register of the thirty-second legislative assembly.

COUNCIL.

Members.	Post-office.	Districts, by counties.
Francisco Miera	Miera	Colfax, Mora, and Union.
J. S. Duncan	East Las Vegas	San Miguel and Guadalupe.
Placido Sandoval	El Porvenir	Do.
Antonio Joseph	Ojo Caliente	Taos, Rio Arriba, and San Juan.
J. M. Archuleta, jr.	Lumberton	Do.
Charles A. Spiess	Santa Fe	Santa Fe.
Thomas Hughes	Albuquerque	Bernalillo.
T. A. Finical	do	Do.
J. Francisco Chavez	Pinos Wells	Valencia.
W. E. Martin	Frisco	Socorro and Sierra.
A. B. Fall	Las Cruces	Donna Ana and Grant.
George Curry	Roswell	Grant, Donna Ana, Lincoln, Chaves, and Eddy.

HOUSE OF REPRESENTATIVES.

John Morrow	Raton	Colfax.
Marcelino Martinez	Cleveland	Mora.
Ollin E. Smith	Clayton	Union.
José Y. Lujan	San Ignacio	San Miguel.
Francisco Lucero	Chaperito	Do.
Manuel A. Sanchez	Watrous	Do.
José Pablo Sandoval	Anton Chico	Guadalupe.
José D. Sena	Santa Fe	Santa Fe.
Larkin G. Read	do	Do.
Malaquias Martinez	Taos	Taos.
Venceslao Jaramillo	El Rito	Rio Arriba.
Felix Garcia	Lumberton	Taos, Rio Arriba, and San Juan.
Juan N. Jaques	Largo	Do
Gus. Mulholland	Gallup	Bernalillo.
Antonio Oritz, jr.	Pena Blanca	Do.
Herculano Garcia	Albuquerque	Do.
Maximiliano Luna	Los Lunas	Valencia.
Desiderio Sandoval	Cebolleta	Do.
F. A. Reynolds	Chloride	Socorro and Sierra.
Clemente Castillo	Polvadera	Do.
W. H. H. Llewellyn	Las Cruces	Donna Ana.
William Cristman	Pinos Altos	Grant.
Joseph A. Mahoney	Deming	Donna Ana and Grant.
U. S. Bateman	Eddy	Lincoln, Chaves, and Eddy.

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POPULATION.

The means of obtaining an accurate count of the population of the Territory has not improved since my last report to you. For that reason, the population can only be estimated, and without even the data which I had at hand when I made my last report. The estimate last year was made on the result of the general election held in November, A. D. 1896, the returns of which are on file in the office of the secretary of the Territory. Since that time, there has been no general election held in the Territory.

From information which I have received in response to inquiries addressed to all parts of the Territory, with a view of ascertaining the present population, I find that the greatest gain in population was made in the principal cities and mining districts of the Territory. There has also been quite an influx of new residents to the following districts which lie in the counties of San Juan, Colfax, Lincoln, Eddy, and Chavez. The mining districts of New Mexico continue to hold out attractive allurements to prospectors, the mining industry having received a great impetus in the districts of Cochiti, Red River City, Elizabethtown, San Pedro and Golden, and in Grant and Socorro counties.

The construction of irrigating ditches and reservoirs in the arid regions is reclaiming vast areas and preparing them for cultivation. The home seeker, coming from the more densely populated North and East, finds the conditions so favorable to the production of fruits and grains that each year he induces more and more of his neighbors from his old home to follow his example and take up the new lands of New Mexico and convert them into homes.

The following estimate of the population by counties is as nearly correct as it is possible to make it, to wit:

Bernalillo	35,000
Chavez	5,000
Colfax	14,000
Dona Ana	14,500
Eddy	4,000
Grant	14,000
Guadalupe	7,500
Lincoln	10,000
Mora	17,000
Rio Arriba	19,000
Santa Fe	21,000
San Miguel	35,000
San Juan	4,500
Sierra	5,500
Socorro	19,000
Taos	13,000
Union	7,000
Valencia	14,000
Total	257,000

The Indian population is estimated as follows:

Pueblos	8,600
Jicarillas	850
Mescaleros	450
Navajos	16,000
Total	25,900

This makes a total population of the Territory of 282,900.

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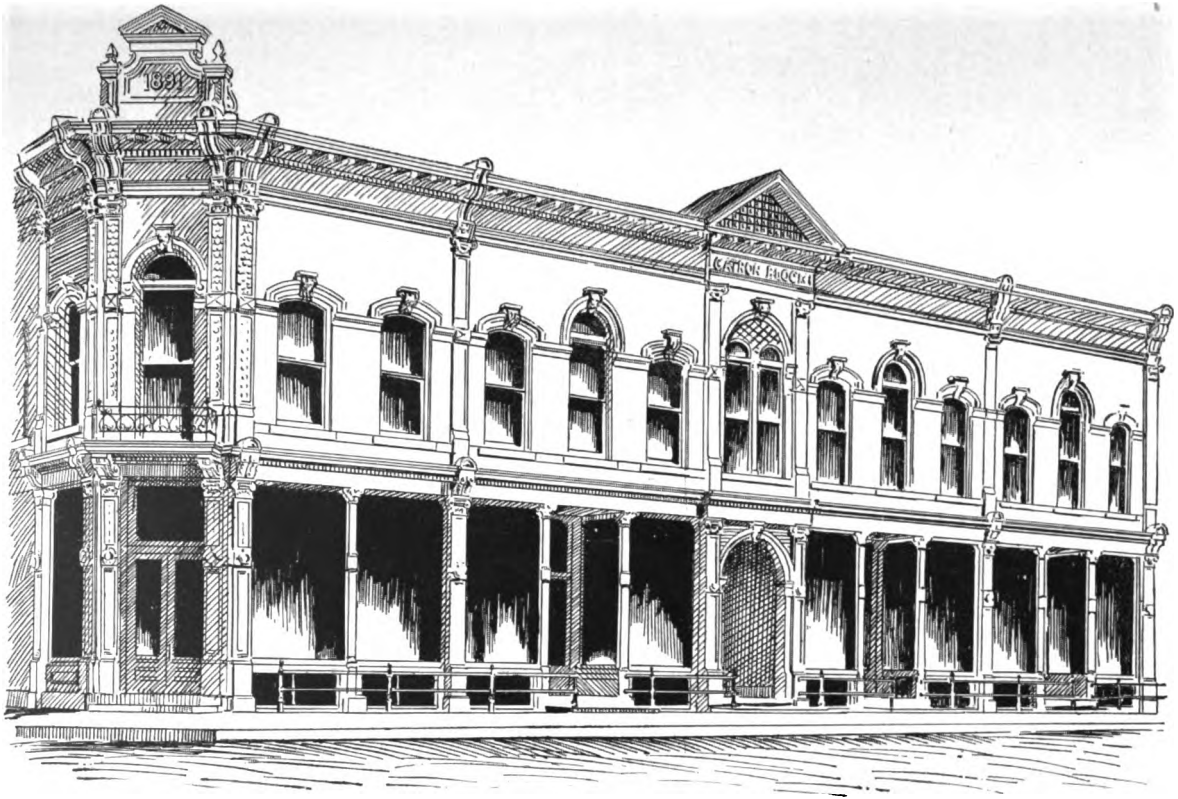

Business Block, Santa Fe.

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OFFICE OF THE ADJUTANT-GENERAL,
Santa Fe, N. Mex., June 30, 1898.

SIR: Replying to your request of this date to furnish a report of the operations of the National Guard of the Territory of New Mexico and its condition on the 30th day of June, 1898, I have the honor to say that I can do little else than point with pride to the thinned ranks of the several organizations of the National Guard of New Mexico, as evidence of the patriotism and martial spirit of its members, and of their willingness to offer up their lives in defense of their country and its honor, and who have thus faithfully and loyally vindicated the purpose of its organization in speedily rallying to the country a body of trained, intelligent, well-disciplined citizen soldiers in the first hour of its need.

Under the President's call for volunteers to serve in the war against Spain the quota of New Mexico was fixed at four troops of cavalry—342 men and 15 commissioned officers—all of whom were promptly recruited, were among the first to answer "ready," and were immediately sent to the seat of war, where they comprise the New Mexico Squadron of the First United States Volunteer Cavalry, known as the "Rough Riders," and gallantly have they served, and won for themselves imperishable renown.

The following is a roster of the field and staff and troop officers and noncommissioned staff of the New Mexico Squadron of the First United States Volunteer Cavalry, mustered in May 7, 1898:

Maj. H. B. Hersey, commanding; First Lieut. James A. Massey, assistant surgeon; Herbert J. Rankin, James B. Brady, hospital stewards.

Troop E.—Frederick H. Muller, captain; William E. Griffin, first lieutenant; Sherrard Coleman, second lieutenant.

Troop F.—Maximiliano Luna, captain; Horace W. Weakley, first lieutenant; Maxwell Keyes, second lieutenant.

Troop H.—George Curry, captain; William H. Kelly, first lieutenant; Charles L. Ballard, second lieutenant.

Troop G.—W. H. H. Llewellyn, captain; John W. Green, first lieutenant; David J. Leahy, second lieutenant.

Troop I.—Frederick W. Weintge, first lieutenant.

Under the President's second call for volunteers the quota of New Mexico was four companies of infantry—424 men and 15 commissioned officers. The quota was promptly filled, and officers and men sent to Whipple Barracks, Ariz., where they constitute the New Mexico battalion of the Arizona, New Mexico, Oklahoma, and Indian Territory regiment of United States Volunteer Infantry, where they now are, ready for the field, and fearing nothing but that the war may be over before they have an opportunity to meet the enemy.

The following is a roster of the field and staff and company officers and noncommissioned staff of the New Mexico battalion of the Arizona, New Mexico, Oklahoma, and Indian Territory regiment of the United States Volunteer Infantry:

Lieut. Col. David D. Mitchell, commanding; First Lieut. H. M. Smith, assistant surgeon; Ernest C. A. Barber, hospital steward.

Company: John Borradaile, captain; Louis H. Chamberlain, first lieutenant; Louis A. M. McRae, second lieutenant. Mustered in July 6, 1898.

Company: William Clifford Reid, captain; William O. Morrison, first lieutenant; Albert L. Comstock, second lieutenant. Mustered in July 11, 1898.

Company: William Strover, captain; Page B. Otero, first lieutenant; John W. Catron, second lieutenant. Mustered in July 13, 1898.

Company: Albert B. Fall, captain; Charles G. Cruickshank, first lieutenant; Neill Edwards Bailey, second lieutenant. Mustered in July 18, 1898.

Of the personnel of the officers and men in the two New Mexico volunteer battalions, it is but just to say that in physique, in drill, discipline, and all soldierly qualities they are not surpassed by any soldiers in the United States Volunteer Army. In the few opportunities they have had to face the enemy they have shown wonderful courage and fortitude and conducted themselves like veterans.

Of the 29 commissioned officers in the two battalions, 14 were at the commencement of the war active officers of the National Guard, and several others had at one time belonged to that organization.

Owing to the fact that a number of the National Guard organizations have been left without commissioned officers, and for that reason are in a manner disorganized, I am unable to obtain reports as to the number of men from the National Guard who have enlisted in the United States volunteer service. Company G, stationed at Albuquerque; Company I, stationed at Las Vegas, of the First Infantry Regiment, and Troop E of the First Cavalry, stationed at Santa Fe, have practically disappeared, both as to officers and men. This is also true in a measure as to the enlisted men of Troop C of the First Cavalry, stationed at Aztec; and all of the organizations have contributed more or less officers and men to the grand cause. I think it is safe to say,

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that of about 1,100 officers and men from New Mexico (about 200 enlisting in other States and in the Regular Army) in the present war, at least one-half were National Guard members.

In view of the uncertainty that exists as to how long the war may continue, and knowing that a third call for volunteers would have the effect to again disorganize, it has been thought expedient not to attempt a reorganization of the National Guard until the war shall be over.

Very respectfully,

WILLIAM H. WHITEMAN,
Adjutant-General.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

NEW MEXICO'S WAR RECORD.

Since New Mexico became a part of the United States by the formation of her Territorial government, she has never failed to give a prompt response to the nation's call for soldiers. The loyalty and patriotism of the people of New Mexico can not be successfully questioned in view of her war record.

THE INDIAN WARS.

In the early history of the Territory the frequent Indian outbreaks were a source of great danger and distress in the West. New Mexico had her full share of suffering from this cause.

The large number of Indian depredation claims now in progress of adjudication by the Government affords some idea of the destruction of property by the Indians, but numerous graves, to be found in all parts of the Territory, testify to the loss of human lives and the valor of her native people. Happily those days of death and destruction are gone, and gone forever, by reason of the wise and humane policy of our Government towards the Indians.

In those early wars New Mexico rendered material assistance to the Government by organizing and equipping her militia and sending them into the field, where they rendered valuable services in subduing those savage tribes. Several thousands of the citizens of the Territory served as soldiers during those Indian wars, but I regret that, owing to primitive methods of keeping records in those early days, it is impossible for me to give an accurate list either of those engaged or of those who fell in those wars.

THE CIVIL WAR.

In the war between the States, commonly called the war of the rebellion, New Mexico responded promptly, and, according to the records, sent into the field in defense of the Union 6,561 soldiers, a large majority of whom were natives. Four thousand four hundred and thirty-two of these were enlisted for three years; they were engaged at Valverde, Glorietta Mountains, San Augustine, Peralta, and other battles, and 277 of them were killed in battle or died from wounds and other causes.

Many citizens of New Mexico entered the Union Army in other regiments and at other places, so that the records do not show the entire number of soldiers furnished by the Territory. I fully believe, from investigation, that New Mexico furnished about 9,500 soldiers to the Union Army during the civil war, or about 10 per cent of the entire population of the Territory, and none at all to the Confederate army, so far as I am able to ascertain.

THE SPANISH-AMERICAN WAR.

When war was declared between the United States and Spain New Mexico was alive with enthusiasm. A telegram from the War Depart-

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ment, authorizing the enlistment of a squadron, or four troops, of cavalry for the First United States Volunteer Cavalry, was received by me on the 25th day of April last, and on the 6th day of May following the entire number was mustered in in accordance with the call, and they left Santa Fe on the following day, May 7, for the concentration camp at San Antonio, Tex. Later, a call was received for 100 more men from New Mexico for the same regiment, and they were recruited, mustered in, and went to the front within ten days after the call was received.

For this regiment, now familiarly known as "Roosevelt's Rough Riders," New Mexico furnished about 500 officers and men. A large majority of these were young men, many of them being under the age of 21 years, and were recruited from all the walks of life. Among them were many college students, business men, clerks, ranchmen, cowboys, and miners. Most of them were accustomed to the saddle and capable of being ideal cavalry soldiers. These men, with their regiment, participated in the battle of Las Guasimas and the daring charge and capture of San Juan Hill near Santiago de Cuba, and their deeds of valor, now known to the nation and the civilized world, will in future form one of the brightest pages in our military history.

Of this regiment Col. Theodore Roosevelt has kindly said, in a letter addressed to me—

SANTIAGO DE CUBA, *July 25, 1898.*

MY DEAR GOVERNOR: I write you a line just to tell you how admirably the New Mexico troopers in the battalion of the Rough Riders which I have commanded before Santiago have behaved. Three of the eight troops with me were from New Mexico, being commanded by Captains Muller, Luna, and Llewellyn. All three captains and all three troops distinguished themselves. As for the troopers themselves, I can not say too much for their daring and resolution in battle, their patient endurance of every kind of hardship and labor, and their discipline, ready obedience, and order in camp, these last qualities being as indispensable to soldiers as courage itself. I am more than proud to be in the same regiment with them. I can imagine no greater honor than to have commanded such men.

Among the promotions which it gave me peculiar satisfaction to recommend were those of Sergeant Dame, to be lieutenant, and of Lieutenant Keyes, to be adjutant.

Captains Muller, Llewellyn, and Luna have all three shown such gallantry and efficiency that it would be difficult to distinguish between any two of them. Captain Muller and Captain Llewellyn were under my immediate eyes in both fights. In the charge on the first hill in the Santiago fight they were with me, and their two guidons, with that of Captain Luna, were planted on the hill before any others, and almost at the same moment. In both fights Captain Luna was, as it happened, also under my immediate eye, and I was more than pleased at the fearlessness with which he led his men into the hottest fire. All three met instantly every demand I made on their courage and capacity, and I made very many, for we have had hard fighting.

I only wish I could get my remaining troops, and lead them all in the Porto Rico expedition.

With great regard, I am very sincerely yours,

THEODORE ROOSEVELT,
Colonel First United States Volunteer Cavalry.

Hon. MIGUEL A. OTERO.

Still another call was received from the War Department for four companies of infantry, to form a part, or one battalion, of a regiment called the Arizona-New Mexico-Oklahoma-Indian Territory United States Volunteer Infantry. Within a very few days after this call was received the 15 officers and 424 noncommissioned officers and privates left New Mexico for Whipple Barracks, Ariz. These four companies were recruited at four of the principal cities of the Territory—Santa Fe, Las Vegas, Albuquerque, and Las Cruces. Men from all parts of the Territory enlisted in them, and these soldiers were composed of robust and

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enthusiastic young men who are creditable alike to the Territory and the nation.

More men responded under each call than were required to fill our quota, and, in their eagerness to serve their country, it is estimated that 150 enlisted in the Regular Army and in regiments from the States, and some of whom are now with the army in the Philippine Islands.

Thus New Mexico has furnished 1,089 soldiers for the late war, and would and could have furnished many more had the opportunity been afforded us.

STATEHOOD.

I would most earnestly renew my recommendation made in my last report with reference to the early admission of New Mexico as a State of the Union; the reasons given at that time for such admission are stronger now by reason of increased population, wealth and intelligence.

Under the treaty of peace concluded between the United States and Mexico, February 2, 1848, known as the "Treaty of Guadalupe-Hidalgo," it was provided that "the territory acquired by the Mexican war and under that treaty should be incorporated in the union of the United States, and be admitted at the proper time (to be judged of by the Congress of the United States) to the enjoyment of all the rights of citizens of the United States according to the principles of the Constitution."

Since that time, California and Colorado have been admitted, and New Mexico and Arizona (which was formerly a county of this Territory) have been refused that privilege, and, I might say, right. For fifty years the Territory, through its legislature and by the recommendations of its governors, has been asking for this recognition guaranteed by solemn stipulations. As long ago as 1850 New Mexico adopted a State constitution and elected a governor and two United States Senators, and its admission was only prevented by the adoption of the celebrated "compromise measures of that year." Twenty years afterwards it held a constitutional convention which formulated a most admirable constitution. In 1876 a bill to admit it to statehood, together with Colorado, passed both Houses of Congress, and only failed to become a law by nonconcurrence in an amendment to that bill. Again, in 1889, there was a constitutional convention, lasting nearly a month, composed of men of the highest character and ability, and their labors resulted in the presentation of a constitution which I have no hesitation in saying was the best formulated in the United States. Copies were laid before both Houses of Congress, and several bills were introduced for its admission; and since that time, each session of Congress has seen bills introduced by members of both political parties for the admission of New Mexico as a State, which have so far failed, and for which failure no good reason has been given. Another bill for this purpose will be introduced at the coming session of Congress, and I urge its earnest consideration in behalf of the quarter of a million people of this Territory.

The organization of civil government in the Territory of New Mexico was unique. The organic act establishing the Territory was approved September 30, 1850; the ratification of the treaty of peace between the United States and Mexico was had May 30, 1848, and proclamation thereof made July 4, 1848, just fifty years earlier than the capture of Santiago. But two years prior to that time the United States Government had established through its military authority a complete code of civil laws for the future Territory of New Mexico, which at that time consisted of the present Territory, all of Arizona, and the southern half

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of Colorado. On the 22d day of September, 1846, Brig. Gen. S. W. Kearny, in command of the army of invasion, issued and proclaimed to the people a "bill of rights," which is still retained on the statute unchanged. On the same day he proclaimed "the Kearny Code," which was reenacted by the legislature in 1865 and nearly all the provisions of which are still in force; and on the same day, by virtue of his authority as brigadier-general, he appointed the following list of civil officers: Charles Bent, to be governor; Donaciano Vigil, to be secretary; Richard Dallam, to be marshal; Frank P. Blair, to be United States district attorney; Charles Blumner, to be treasurer; Eugene Seitzendorfer, to be auditor of public accounts, and Joab Houghton, Antonio José Otero, and Charles Beaubian to be judges of the superior court. In his letter transmitting to the Adjutant-General a copy of these laws and list of appointments, General Kearny made the following statement:

I take great pleasure in stating that I am entirely indebted for these laws to Col. A. W. Doniphan, of the First Regiment of Missouri Mounted Volunteers, who received much assistance from private Willard P. Hall, of his regiment. These laws are taken, part from the laws of Mexico, retained as in the original, a part with such modifications as our laws and Constitution made necessary; a part are from the laws of the Missouri Territory, a part from the laws of Texas, and also of Texas and Coahuila; a part from the statutes of Missouri, and the remainder from the Livingstone Code.

The first governor, Bent, was assassinated, the year after his appointment, at the pueblo of Taos, during what is known as the "Taos rebellion," which was suppressed with considerable loss of life by United States troops, out of which rebellion arose a number of prosecutions for treason, conducted by Frank P. Blair, United States attorney.

The civil law and the Kearny code remained the rules of civil action down to 1876, when, by statute, the "common law as recognized in the United States of America" was adopted. This was the law of the land until the legislature of 1897 adopted a "Code of civil procedure."

The first legislative assembly of the Territory of New Mexico assembled in Santa Fe in December, 1847. The laws passed at that session were printed in a pamphlet, to which was added "Order No. 10" from the Headquarters of the Ninth Military Department, imposing a duty of 6 per centum on merchandise imported into the Territory. The authorization of these laws is printed in the same pamphlet, as follows:

SPECIAL ORDER } HEADQUARTERS NINTH MILITARY DEPARTMENT,
No. 5. } *Santa Fe, N. Mex., February 5, 1848.*

The foregoing legislative enactments of the Territory of New Mexico, having been duly reviewed by the commanding general of the Territory, they are hereby approved and they will be duly observed.

By order of brigadier-general,

STERLING PRICE.

W. E. PRINCE,
Aide-de-Camp and Acting Assistant Adjutant-General.

The first section of the General Orders No. 10, referred to on the title page of the laws, is as follows:

On and after the first day of February, 1848, the following regulations will govern the civil and military officers in the discharge of their respective duties: First, the officers named in the statutes as secretary of Territory, United States district attorney, and United States marshal are hereby abolished.

It is believed the above résumé of the methods of introducing American laws into conquered Spanish territory may be of interest at this time when similar conditions exist which may require similar action on the part of the Government.

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"THE ADOBE PALACE."

The old residence of the governors-general under Spanish and Mexican rule, known as the "Palace," which for more than three hundred years has been the headquarters of the governors, captains-general, and chief executives of the Territory, province, or kingdom, is now in an admirable state of preservation, owing to the liberal appropriations made by the Government in the past. I regret to say, however, that unless the General Government continues to look after this historic old building, as it has in the past, it will soon go to ruin and decay.

It is at present occupied in the west end by the post-office; in the center as the residence and office of the Territorial secretary, and in the east end by the governor for his office, and the historical society of the Territory. This last institution has stored therein many rare and curious images and other works of prehistoric races found in the Territory, as well as ancient arms, armor, and articles of household use.

In an act passed by the last Congress, donating lands to the public schools and institutions of the Territory, approved June 21, 1898, by inadvertence a clause was inserted, being the last three lines of section 6 of the act, donating this historic old building to the Territory, as follows:

> The building known as the "Palace" in the city of Santa Fe, and all lands and appurtenances connected therewith and set apart and used therewith, are hereby granted to the Territory of New Mexico.

This clause does not meet with the approbation of our citizens, who believe that, so long, at least, as we are a Territory, this palace should remain under the fostering care and protection of the General Government.

The Territory is not financially able to take proper care of and preserve this building as should be done, as it requires all the revenue possible to maintain its own public buildings and institutions which are necessary to the proper conduct of its government. In addition our people feel that the United States owning and caring for this building puts it in closer touch with all of our citizens, and accordingly, I most earnestly recommend that such clause of section 6 of the act above referred to be repealed.

While the new capitol building, now nearing completion, will have offices for the governor and secretary, yet they are so distant from the business part of the city, it will be inconvenient for these officers to use them except during the session of the legislature, which meets only once in two years and sits for sixty days, and during the remainder of the two years these officers should be in a more convenient locality, such as is afforded by the old "Palace," and it is only proper that the Government itself should furnish these officials with offices, the same as it does other United States officials.

The post-office is also located in this building, most conveniently for the accommodation of the public, and, of course, without any expense for rent.

The building is now badly in need of repair, and will of course suffer greatly on account of not getting the appropriation asked for last year by the Territorial secretary and custodian.

I trust that my recommendation will be carried out, and that the necessary appropriation will be made by Congress, as asked by the secretary, and attached hereto, in order that the necessary work be commenced at as early a day as possible.

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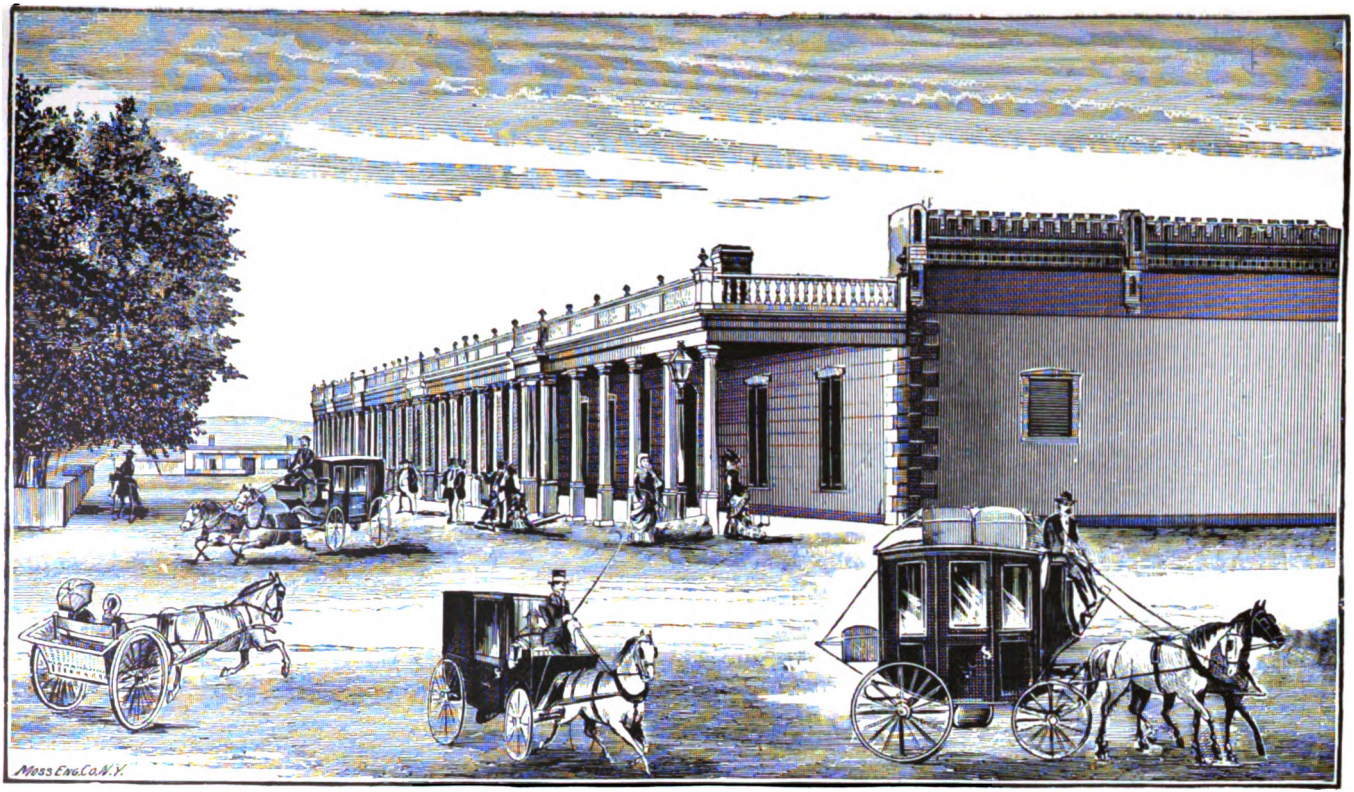

ADOBE PALACE, SEAT OF GOVERNMENT 300 YEARS AGO AT SANTA FE.

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In this connection, showing the historical association connected with this old building, I desire to quote from the report of my predecessor, Hon. L. Bradford Prince, made in 1890. The accuracy of the statements here made, can not be doubted, as ex-Governor Prince has made a study of New Mexico and has written a history of the Territory which is recognized as an authority.

Ex-Governor Prince in his report says:

Without disparaging the importance of any of the cherished historical localities of the East, it may be truthfully said that this ancient palace surpasses in historic interest and value any other place or object in the United States. It antedates the settlement of Jamestown by nine years, and that of Plymouth by twenty-two, and has stood during the two hundred and ninety-two years since its erection, not as a cold rock or monument, with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living center of everything of historic importance in the Southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a Territory, this has been his official residence.

From here Oñate started in 1599 on his adventurous expedition to the Eastern plains; here, seven years later, 800 Indians came from far off Quivira to ask aid in their war with the Axtaos; from here, in 1618, Vincente de Salivar set forth to the Moqui country, only to be turned back by rumors of the giants to be encountered; and from here Peñalosa and his brilliant troop started on the 6th of March, 1662, on their marvelous expedition to the Missouri; in one of its strong rooms the commissary-general of the Inquisition was imprisoned a few years later by the same Peñalosa; within its walls, fortified as for a siege, the bravest of the Spaniards were massed in the revolution of 1680; here, on the 19th of August of that year, was given the order to execute 47 Pueblo prisoners in the plaza which faces the building; here, but a day later, was the sad war council held which determined on the evacuation of the city; here was the scene of triumph of the Pueblo chieftains as they ordered the destruction of the Spanish archives and the church ornaments in one grand conflagration; here De Vargas, on September 14, 1692, after the eleven hours combat of the preceding day, gave thanks to the Virgin Mary, to whose aid he attributed his triumphant capture of the city; here, more than a century later, on March 3, 1807, Lieutenant Pike was brought before Governor Alencaster as an invader of Spanish soil; here, in 1822, the Mexican standard, with its eagle and cactus, was raised in token that New Mexico was no longer a dependency of Spain; from here, on the 6th of August, 1837, Governor Perez started to subdue the insurrection in the north, only to return two days later and to meet his death on the 9th near Agua Fria; here, on the succeeding day, Jose Gonzales, a Pueblo Indian of Taos, was installed as governor of New Mexico, soon after to be executed by order of Armijo; here, in the principal reception room, on August 12, 1846, Captain Cooke, the American envoy, was received by Governor Armijo and sent back with a message of defiance; and here, five days later, General Kearny formally took possession of the city, and slept, after his long and weary march, on the carpeted earthen floor of the palace.

From every point of view it is the most important historical building in the country, and its ultimate use should be as the home of the wonderfully varied collections of antiquities which New Mexico will furnish.

Coming down to more modern times, it may be added that here General Lew. Wallace wrote Ben Hur, while governor, in 1879 and 1880.

TERRITORY OF NEW MEXICO,
OFFICE OF THE SECRETARY AND CUSTODIAN ADOBE PALACE,
Santa Fe, October 3, 1898.

YOUR EXCELLENCY: I had the honor on the 10th day of September, 1897, to submit for your consideration and approval, to be forwarded to the honorable Secretary of the Interior, a statement of the then condition and needs of the Adobe Palace in this city.

In section 6 of an act of Congress approved June 21, 1898, the Adobe Palace and the grounds in connection therewith were ceded to the Territory of New Mexico. This historical building has often been brought to the attention of Congress in petitions for its preservation, and its transfer came as a surprise to the whole Territory. It is almost the last remaining link between the very earliest days of Spanish occupation more than three hundred years ago and the present.

The building is a Mecca for all tourists to New Mexico and the southwest, both native and foreign, and, as custodian, I have to report visitors almost every day in the past fifteen months, sometimes numbering as many as forty at one time.

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The transfer of this building to the Territory, under the provisions of the act, means its early and sure destruction, for under the act any income derived from the building must go to the school fund, and the Territory could not and would not preserve it. Placed as it is upon the public plaza, as in Spanish and Mexican countries is always done, I feel confident there would be a constant struggle by individuals for occupancy of it, and there would be no income derived for the school fund.

Upon the request of very many of the most public spirited, respectable, and intelligent of our citizens, within and without the city of Santa Fe, I would most earnestly urge the repeal of that portion of section 6 in the said act referring to the Adobe Palace in Santa Fe.

And in this connection it is proper to call attention to the estimates submitted last year for the purpose of putting the Adobe Palace in complete and substantial repair, a copy of which is forwarded herewith. The need is greater to-day than a year ago.

I am, very respectfully, yours,

GEO. H. WALLACE,
Secretary of New Mexico and Custodian of the Adobe Palace.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe.

TERRITORY OF NEW MEXICO,
OFFICE OF THE SECRETARY AND CUSTODIAN OF THE ADOBE PALACE,
Santa Fe, September 10, 1897.

SIR: In reply to your request for a statement as to the condition and needs of the Adobe Palace, I have the honor to submit the following:

The amount ($2,000) expended by my predecessor during the last fiscal year for new roof, repairs to the post-office room, etc., left much to be done to place the building in thorough repair and preserve it from the weather. The wooden sidewalk is nearly worn out and must be replaced. It will be better for the building, and comply with the request of the city, if this should be made of cement with a stone curbing. About 150 feet of the portal is falling from decay, and must be replaced. This was not roofed last year, for this reason. The ceilings of the entire building have been of canvas, but now that there is a steel roof, economy and health demand the substitution of plaster in place of the constantly falling cloth, so easily destroyed and calling for repair. The floors are scarcely any two on the same level, and being of soft pine are very much worn and in some places patched to the limit of possibility.

A thorough coat of paint, outside and in, and calsomining for the walls are badly needed, in addition to a plaster repair of the outside and inside walls.

The plumbing needs overhauling, and, as the supply of water is now entirely from the city system, should be extended to the resident portion of the Palace.

The following is submitted as an estimate of the amount necessary by the above conditions, and for the proper protection of the building, and to make it comfortable for occupancy:

Ceiling and floors	$2,000.00
Cement sidewalk	1,000.00
Painting and calsomining	500.00
Portal and roof	1,000.00
Plumbing	500.00
Incidental repairs	1,000.00
Total	6,000.00

Very obediently yours,

GEO. H. WALLACE,
Secretary of New Mexico and Custodian of the Adobe Palace.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

DONATION OF SCHOOL LANDS.

By the act approved June 21, 1898, donations of land were made to the various Territorial institutions and the public schools of the Territory, amounting in the aggregate to about 5,000,000 acres; this being done in anticipation of our becoming a State, and for the purpose of aiding the Territory in the education of its people, and there was

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appropriated by section II of that act $10,000, to be expended "under the direction of the Secretary of the Interior for the purpose of bearing the expenses of the selection and segregation of said respective bodies of land, including such compensation to said commission that the Secretary of the Interior may deem proper."

The Secretary of the Interior has decided that no portion of this amount can be used for paying the fees of the local land officers for the entry of these lands, and the Territory has absolutely no funds which it can draw upon for the purpose of making these payments, which are necessary under the ruling of the Secretary of the Interior; nor can it procure the same, as our bonded debt is now beyond the limit fixed by the act of Congress, and the rate of direct taxation necessary for the carrying on of the affairs of the Territory and paying interest is now all that the people can bear. It is estimated that the amount of fees to be paid to the local land officers will amount to about $25,000, which will have to be in hand or available before the generous donation by Congress can be of service to the Territory.

While this grant is very large in area, it must be remembered that probably 90 per cent of the lands which could be selected is practically a desert, and of no value for sale or leasing purposes. The provisions in section 10 of the act limiting the area of land to be leased to any one person or corporation, to one section of 640 acres, will prove a great detriment to carrying out the intent of the act; while such a provision is a wise protection in an agricultural country, it is in such a country as we have here almost prohibitive, in that these leases must be made almost invariably to cattle or sheep men, who require large areas of the sort of land we have for the grazing of their animals. I would therefore recommend that this act be amended so that there may be no limit upon the area that may be leased, except for agricultural or timber land, and that an appropriation of at least $25,000 be made for the purpose of paying the land office fees for the listing and segregation of such lands. I, in another part of my report, have recommended the repeal of the last portion of section 6 of said act donating the "Old Palace" to the Territory of New Mexico, giving my reasons therefor.

APPROPRIATIONS.

The salary of the governor is fixed by statute (May 1, 1876, R. S. U. S., sec. 1845) at $3,500 per annum, but for many years—indeed, since the act was passed—there has only been an appropriation to pay this salary of $2,600, and it has been determined in the Supreme Court of the United States, in a case taken from the Court of Claims, that the acceptance by the officer of the amount of the appropriation was a bar to his receiving anything more.

The same is true of the secretary of the Territory, his salary, as fixed by statute (same section), being $2,500 per annum, and the appropriation being $1,800.

While these amounts might have been sufficient at the time the act was passed, twenty-two years ago, the duties and responsibilities of both offices have increased to a wonderful extent by reason of the increase in population, the construction of railroads, and general business enterprises. The actual work occupies all the time during business hours, and constantly encroaches far into the night, besides necessitating frequent journeys from one part of the Territory to another on official business.

In addition, there is no provision of law for a private secretary or clerk to the governor, while his official correspondence alone is enor-

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mous, and he is obliged to employ a private secretary for only a part of the time, and settle for the same out of other resources, not being able to give constant employment, which should be done in the interest of public business.

The secretary of the Territory is allowed a clerk, with an appropriation of $1,200 per annum to pay the same. I would therefore recommend most strongly that the governor be allowed a private secretary by the Government, at a salary of $1,200 per annum, and that an appropriation be made accordingly.

I would also earnestly recommend that the full compensation provided by law to the governor and secretary be included in an appropriation to that amount.

By the Territorial laws the governor is made ex officio a member of nearly all of the boards of regents and directors of the different Territorial institutions, and of necessity meets with them in different portions of the Territory when occasion presents. This of itself involves a considerable outlay of traveling expenses, for which the present appropriation of $500 is totally inadequate, as out of this amount has to be paid fuel, lights, stationery, telegrams, janitor service, office furnishings, etc., and, as the office is constantly running behind, I would recommend an increase for contingent expenses of the governor's office.

The five judges of the Territory of New Mexico, consisting of the chief justice of the supreme court, with four associate justices, are allowed $3,000 per annum only. The work is so heavy that they are actually holding either district or supreme court for the hearing and trial of cases eleven months in each year; and under our Territorial law the courts are open at all times for the transaction of any business not involving an actual trial by jury, so that the chambers work is very heavy. In the Indian Territory there are four judges, at an annual compensation of $5,000; Oklahoma has five judges, with a salary of $3,000 each. The population of New Mexico, while not as large, is nearly equal to that of the two above-named Territories, while its area is double that of the two Territories named.

The compensation of these judges was also fixed on the 1st of May, 1876, when there were no railroads in the country, less than one-third of our present population, with no communication with the outside world except by wagon, and it is altogether too inadequate a compensation for the responsibility and labor involved.

I would therefore earnestly recommend that the compensation of each of the judges of the supreme court be increased to $5,000 per annum.

HOW TO OBTAIN TITLE TO PUBLIC LANDS.

The following information is furnished by the register of the United States land office at Santa Fe, N. Mex.:

There are about 57,000,000 acres of unappropriated public land in the Territory of New Mexico. Agricultural public land is subject to entry only under the homestead and desert-land laws. The homestead laws of the United States secure to qualified persons the right to settle upon, enter, and acquire title to not exceeding 160 acres of public land, by establishing and maintaining residence thereon and improving and cultivating the same for the continuous period of five years. A homestead entryman must be the head of a family, or a person who has arrived at the age of 21 years, and a citizen of the United States, or one who has declared his intention of becoming such, and he must not be the owner of more than 160 acres of land in any State or Territory. A wife who has been divorced from her husband, or deserted by him, can make

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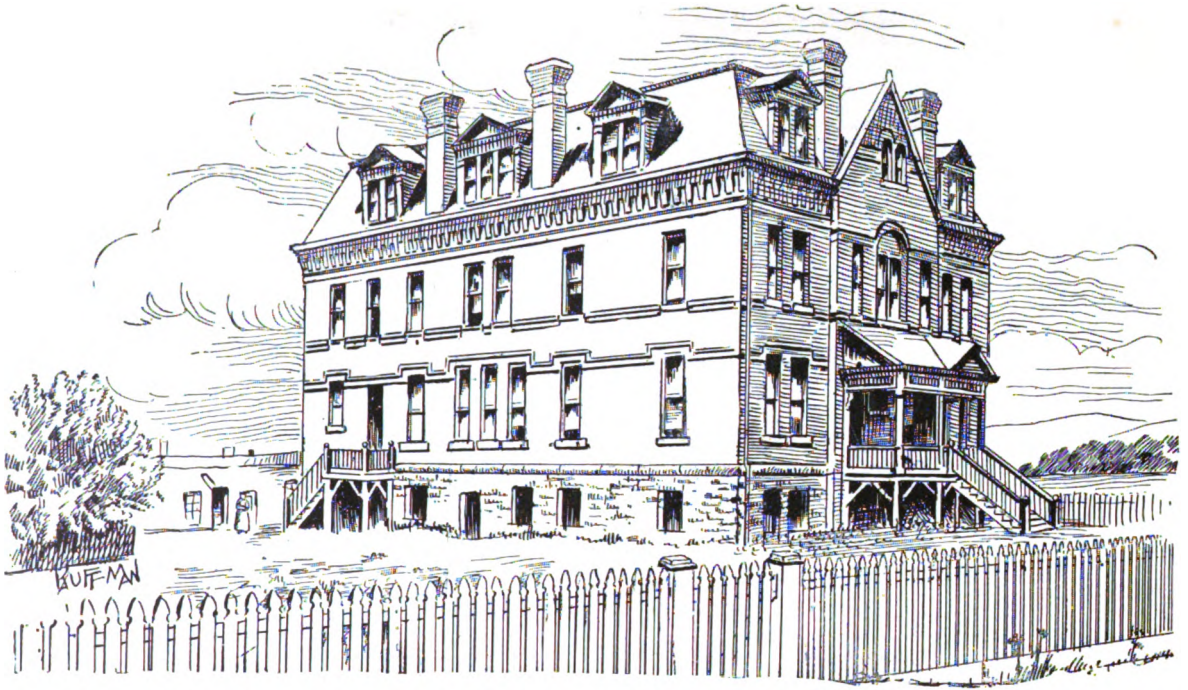

PRESBYTERIAN MISSION SCHOOL, SANTA FÉ.

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homestead entry. Payment of $16 fees and commissions must be made at the time of making entry, and final proof can be made at any time when five years' residence thereon and a cultivation of a portion of the land can be shown. The cost of making final proof, including publication of notice, taking testimony, and commissions, is from $14.25 to $15. A party can, at the time of making homestead entry of 160 acres, enter 160 acres under the desert-land act. He will be required to pay 25 cents per acre at the time of making the entry, after which he is required to expend at least $3 per acre ($1 per acre each year for three years) in labor or money in improving the land and constructing reservoirs, canals, and ditches for irrigating and reclaiming the tracts entered; and the party may make final entry at any time prior to the expiration of four years, on making the required proof of reclamation, of expenditure to the aggregate amount of $3 per acre, and of the cultivation of one-eighth of the land and making a final payment of $1 per acre.

New Mexico lies between the thirty-first and thirty-seventh parallels of latitude. The southern portion of the Territory has an elevation of 3,500 feet, and from that the height above sea level ranges to 12,000 feet in the mountain ranges; and on account of this elevation most any part of New Mexico is found to be delightfully cool and pleasant throughout the summer. The air is wonderfully pure and bracing, and the sunshine, "the glory of New Mexico," brings health and strength to the invalid, many of whom come here suffering mostly from tuberculosis and who derive a wonderful benefit from this climate, often permanent cures being made.

People visiting New Mexico learn many interesting points in the history of this country; they learn to love the wilderness of the lofty and picturesque Rockies—the Italian or "turquoise-tinted skies," as a western writer described them. The beauties of scenery and sunset, never before realized, will make a lasting impression in favor of our beautiful Territory.

SOCIAL CONDITIONS.

The cities and towns of our Territory are filled with cultured, companionable people, ever ready to entertain and look out for the welfare of the stranger within its gates. The hotels are equal to any of the Eastern summer resorts, and life is as attractive here as anywhere else in the world. In most of the towns throughout New Mexico the plaza forms the center of the town. In this plaza concerts are given regularly by the local bands, which are enjoyed alike by the resident and the stranger.

PREHISTORIC TIMES.

Long before Columbus set foot on the shores of the New World the valleys and plains of New Mexico were the seat of a civilization which has been the wonder of scientists and explorers; for ages unknown people contended for the possession of the lands and streams. Nation after nation of strange beings followed each other in conquest, and to-day evidences are to be found in the ancient settlements of their unknown inhabitants.

The homes of the cliff dwellers still stand, and the old pueblos are the homes of the descendants of the builders, and the antiquarian will find enough of that which is old beyond tradition, yet new to the nineteenth century, to keep him occupied during years of patient research. It is not necessary to go to Egypt or Persia to find ruins and relics of people who have passed from the face of the earth; they can be found in New Mexico, and within easy reach of comfortable homes and hotels.

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CLIMATIC.

There is no portion of the Union possessing such splendid climatic conditions as exist in this Territory, Here we have a dry, arid temperature, with no extremes of heat or cold, with clear, bright skies and an almost continuous sunshine, that has given New Mexico the well-known sobriquet of "the Sunshine State."

The climate is peculiarly adapted to the cure of pulmonary diseases. A celebrated physician who has given much study to the subject, and who recently made a tour of Europe and America in the interest of this class of the afflicted, investigating the climatic conditions of the various countries with reference thereto, recently stated that the conditions existing in New Mexico were superior to those found elsewhere; that it was an ideal climate for the cure of pulmonary diseases. This is conceded by the best-informed medical experts.

It is probable that at this time there is no disease that afflicts so large a class of humanity with such fatal results as that of pulmonary consumption; none that causes so much suffering, pain, and sorrow. It is a scourge affecting every class, the rich and the poor, the high and the low—all fall beneath its blight and succumb to its dreadful ravages.

Medicinal science has never been able to master it or to discover medical appliances or remedies that will cure it when once it has a firm hold upon its victim. The greatest minds of the profession have devoted their lives to its study, searching for remedies without avail. All agree that nature's remedy is the best and only cure. Breathing of a pure, invigorating, rarefied atmosphere in an equable climate, with clear, bright sunshine, where the heat of the sun is at its maximum and that of the air at its minimum, are the best conditions for its cure.

All of these conditions are found at their best in New Mexico. In every community may be encountered those who have taken advantage of these life-giving qualities. In a large majority of cases where the invalid has come in the early stages of the disease he has found relief, and either been entirely cured or had many years added to his life.

NEW MEXICO SOIL.*

The soils of New Mexico, as a rule, are quite different from the soils of the Eastern States, and possess many advantages not possessed by the latter.

The power of the soils to produce plants depends upon many conditions, among the more important of which may be mentioned a proper control of the moisture, the climate, and the amount of available plant food present.

In regard to moisture control, soils depending on irrigation for their moisture, as do those of New Mexico, have a decided advantage over soils depending solely upon rainfall. While the valleys of New Mexico have an average annual rainfall of probably some 10 or 12 inches, and the greater part of this usually comes in the summer during the growing season, it is still quite insufficient for the needs of ordinary farm crops which must depend for the greater part of their moisture upon irrigation. The supply of moisture to irrigated soils is under almost absolutely perfect control, provided the water supply is constant. The advantages of such a control of the moisture must be apparent to anyone.

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* Arthur Goss, chemist, New Mexico Agricultural Experiment Station.

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FEDERAL BUILDING, SANTA FÉ.

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MONEY IN IRRIGATION.

The improved systems of irrigation upon which New Mexico has to depend for the multiplication of her useful land area are developing rapidly, but there are still many opportunities for the investment of capital in irrigation projects, which can not fail, under good management, to make millionaires of the projectors.

There is in operation the Springer system of irrigation, with 50 miles of ditches and five reservoirs, covering 22,000 acres. The Vermejo system, which controls 57 miles of ditches and ten reservoirs, supplies 30,000 acres. In the northwestern portion of the Territory there are 200 miles of ditches, watering 24,000 acres. There are several tracts of fertile soil accessible to streams, which will afford an ample supply, awaiting the attention of moneyed men. Also extensive ditch systems are in operation in the Mimbres region of Grant County.

The irrigation projects noted above are in the four corners of the Territory. In the meantime the great central portions are receiving attention, more than fifty companies having been organized for irrigation projects, and several having plants in operation, affording to the home seeker at the present time ample opportunity for settlement and reclamation.

The valley of the Rio Grande presents the most extensive field for operations of this kind, as the present narrow strip of lands cultivated can be widened very materially by the proper disposition of the water which flows so abundantly from the north and is now allowed to be wasted. A very few years will find all the water now suffered uselessly to run away utilized to the highest degree and enlarging the area of the agricultural and horticultural land to an extent almost fabulous.

Meanwhile individual enterprise is increasing the local supplies by the erection of multitudes of windmills, pumping from artesian wells in various parts of the Territory. To the settler this means much, and will add in a great measure to the future possibilities of production.

THE COMMISSION OF IRRIGATION AND WATER RIGHTS OF NEW MEXICO,
Albuquerque, N. Mex., September 30, 1898.

SIR: Replying to your favor of the 20th instant, requesting the report of the commission of irrigation and water rights for your annual report to the honorable Secretary of the Interior, I desire to say that the work of the commission, as a whole, is incomplete; but I submit herewith the report of Mr. P. E. Harroun, C. E., who has been retained as engineer by the commission.

The report is valuable on account of its accuracy and detailed description covering the Territory, its broad range of technical information on the question of irrigation and water supply, and from the fact that the Territory has never before attempted to compile the data contained in this report.

In justice to your commission I have to say that we could not conclude our work until Mr. Harroun had completed his report, which he has only done yesterday. The secretary tried to secure a meeting of the full commission, but could not secure a single member in the short time in which to answer your request for a report.

The full report of the commission will be in your hands early in December. The final report will include not only this report of Mr. Harroun on irrigation and water supply, but will contain the report of the subcommittee on irrigation law and the conclusions and recommendations of the commission covering the entire subject of irrigation in New Mexico.

I am, very respectfully,

J. E. SAINT, *Secretary.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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THE PRESENT CONDITION OF IRRIGATION AND WATER SUPPLY IN NEW MEXICO.

[A report to the commission of irrigation and water rights of New Mexico, by P. E. Harroun, civil engineer, Albuquerque, N. Mex.]

To the President and Members of the Commission of Irrigation and Water Rights of New Mexico.

GENTLEMEN: I herewith transmit you my report on the present condition of irrigation and water supply in New Mexico.

Owing to the limited time available for this investigation, it has been found impossible to go into the subject in any other than the most general way, and I have been unable to do more than present to you the bare facts of the case.

Irrigation in New Mexico is wholly confined to the valley of the Rio Grande, the Lower Pecos, and the upper portions of the valleys of streams furnishing a perennial water supply, leaving the vast bodies of arable land between the sources of supply and the trunk streams, unimproved.

This is due to the fact that throughout the Territory there are very few streams whose discharge is sufficient to overcome the great losses due to seepage in the wide sandy bottoms which are characteristic of that portion of their course lying between the trunk streams and their source of supply, and also to the fact that in their upper reaches their channels are generally well confined and of such a character as to admit of diversion by individual or community effort.

Scientific development of the water supply for irrigation has been undertaken in but two sections of the Territory, viz, on the Lower Pecos by the Pecos Irrigation and Improvement Company, and in the upper Canadian district by the Maxwell Land Grant Company, and to-day these are the most wealthy and prosperous sections of New Mexico, thousands of acres being in cultivation where before there was but little or none. The great advantage accruing from such development of the water supply requires no demonstration.

Elsewhere irrigation has been confined to such efforts as the individual and community have been able to make, and with the exception of the San Juan, Taos, and Chama districts has reached a limit beyond which it is impossible to go without adopting modern methods.

The individual and community systems are crude in the extreme, and in order that a proper conception may be had I give a short description of their construction and method of operation, taking for example the series of ten ditches serving the eastern side of the Rio Grande Valley, between San Felipe and Albuquerque, as a typical illustration.

The valley is watered by the Rio Grande, which flows from north to south in a tortuous course, from which the water is taken for irrigation by numerous small canals ranging in capacity from 10 to 30 cubic feet per second. The order of these canals from north to south is the Algodones, Santa Ana, Bernalillo, Sandilla, La Ladera or Alameda, Los Ranchos, Los Griegos de Candelaria, La Verela, Duranes, and Albuquerque, of which the Santa Ana and Sandilla are controlled entirely by the Indians of these pueblos, but differ in no respect from those constructed by the Mexicans. The heads of these canals are of two varieties—open cuts in the bank and diverting dams of brush. Of the former class are the Santa Ana, Sandilla, Los Ranchos, Los Griegos, and La Varela, having no headworks of any description. A cut is simply made in a bend of the river bank, against which the river impinges, and water is drawn off. The other ditches have diverting dams of brush directing the current into the ditch. These dams are constructed by driving cottonwood or willow stakes into the sandy bottom of the river and placing fascines of brush between them, which are weighted down by heavy boulders, while sods are distributed along the upper face.

These dams are not tight, much of the water finding its way through the body of the dam, but they serve to deflect the current toward the head of the ditch and raise the water level from 0.4 to 1 foot. There is one other method of taking water from the river, as shown in the Algodones ditch. The head of this ditch occurs at a rapid of the river, about one-fourth mile below the pueblo of San Felipe. About 25 feet from the east bank, and extending downstream parallel thereto, a brush and boulder wing dam is carried a distance of about 800 feet to the head of the rapids. At this point the diversion from the river is made and the ditch proper begins.

There are no regulating gates or sluices whatever. When the river falls it is found necessary to carry the ditch upstream in order to secure water, while upon a rise of the river the water enters the ditch in such volume as to often cause it to break its banks and flood the lands below. It will be seen that the position of the head of these ditches varies with the height of the river, the variation being at times great as 2 miles. At each flood these diverting dams are washed out and replaced when the river has fallen.

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After leaving the bed these ditches are carried diagonally from the river, as a general thing following the contour of the ground toward the land to be irrigated, the distance varying from one-half to 3 miles. The irrigated lands lie directly under the ditch, the water being taken from small sluice boxes directly onto the land. Properly speaking, there are no laterals, but on each side of every field there usually extends a small ditch carrying from one-half to 1½ cubic feet per second running to the more distant lands, which are rarely more than 1,200 feet. These lateral ditches vary in distance from each other from 100 to 400 feet, but are not permanent and are likely to be changed after each irrigation.

The method of irrigation is wholly that of flooding. When water is needed the sluice boxes are opened and the water is allowed to flow over the land until the irrigator is satisfied. The practice is usually to flood the land to a depth of from 3 to 4 inches over the entire surface.

All the ditches carry a surplus of water, and as a consequence the use of water is excessive. The surplus water from the irrigated fields and the ditches is allowed to find its own way to the river, and the result is that during the irrigation season, from April 1 to November 1, the roads are almost impassable, and nearly as much land laid waste in swamps as is under cultivation.

The bed of the Rio Grande in the upper portion of this valley is generally of a gravelly nature, the underlying strata being of such a character as to prevent excessive seepage, but below Bernalillo the character of the bed changes to an exceedingly treacherous quicksand and the seepage becomes excessive. There has never been any scarcity of water in the valley until a point is reached in the neighborhood of Peralta, when in 1894 for the first time in the memory of the oldest inhabitants, the river went dry near Corrales, and all the ditches from Los Ranchos down were without water.

The amount of land irrigated by these ditches is uncertain, changing from year to year with the caprice of the people, and can not be ascertained with accuracy without a survey. There has never been a survey of the ditches or lands under them, and there are no maps or records of any description in relation thereto. The total amount of land, however, under ditch is approximately 12,000 acres, of which 3,200 acres are under cultivation. Of the balance 1,800 are in swamps and meadow lands from the waste of water of irrigation and the ditches, while the remainder is uncultivated, not from any lack of water or other natural cause, but lack of enterprise, apparently.

It is impossible to estimate the area supplied by each ditch, for lands lying under one ditch and belonging naturally to its system may be irrigated from a higher one. Should a consumer have difficulty with a mayor-domo of his community ditch he may apply to the community of any other ditch for admission, and if they consent, become one of their number, with all the rights and privileges, provided only, that he furnish his quota of the labor assessed, thus making it impossible to determine the land served by each ditch.

Each ditch is owned and controlled by the owners of the land irrigated by it. Each fall an election is held, at which is elected a mayor-domo, who has full control of the ditch for the succeeding season. He assesses the land for the necessary labor to free the ditch from the silt of the preceding year and keep the ditch in repair during the irrigating season; formulates the local regulations; proportions the water to each consumer, and conducts all matters in relation to the ditch.

Before the irrigation season opens he makes a "survey" of the land each owner expects to cultivate, and an assessment of labor is then made accordingly. The assessment made in general is such that he who holds a tract of about 6 acres is required to furnish the labor of one man in cleaning and repairing the entire ditch in the spring, while he who holds 12 acres is required to furnish one man's labor on the ditch as it may be required for the entire season. Tracts of greater or less acreage are proportioned in accordance.

The proportionment of water to consumers by the mayor-domo is entirely arbitrary, although supposed to be based on acreage. No measurements are ever made. The water is simply turned onto the land, and when it is considered by the mayor-domo that the land has received its allotment, turned off again. As all the ditches in this section carry an excess of water this plan has no opponents.

The mayor-domo is also responsible to the consumers in case of damage arising from his negligence in care of the ditch.

In this event a committee is asked for by the injured party, and this committee proceeds to inquire into the facts of the case, and should the mayor-domo be found at fault they assess damages, which the mayor-domo shall pay. The mayor-domo is paid for his services in the superintendence and care of the ditch by each consumer in accordance with the work assessed, the rate usually being 2 castales of corn (about 2½ bushels), or its equivalent, for each man sent to the ditch. He also receives water for his lands free.

Such methods can not be otherwise than wasteful of the water supply and detri-

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mental to the lands served. The excessive use of water on the upper sections of the streams results in great losses from seepage and evaporation, depriving those along the lower river of the water needed to mature their crops, and causing the formation of marsh and alkali lands.

Investigation shows also that much of the great scarcity of water complained of in the middle and lower Rio Grande valleys is due not to a lack of water in the river, but to a failure of the irrigation system, either from high water carrying away the primitive dams, or to breaks in the ditches, rendering it impossible to operate the system.

In considering the subject in detail I have found it expedient to divide the Territory into districts, each of which will be considered in detail.

San Juan.—District No. 1.

Geographical location: Northwest portion of the Territory, covering San Juan and parts of Rio Arriba and Bernalillo counties. Acreage irrigated, 13,870.

This district comprises the area drained by the Rio San Juan and its tributaries in New Mexico, and occupies the extreme northwestern part of the Territory.

The river enters the Territory just below its junction with the Piedras, a short distance below Arboles, Col., and thence turning toward the west, passes out near the northwest corner.

This stream receives several tributaries of importance in its passage through the Territory, and all of these are from the north, rising in the San Juan and La Plata mountains in Colorado.

The drainage entering from the south is exceedingly small and uncertain and may be entirely neglected in a general consideration.

In 1896 the mean flow of the Rio San Juan during the irrigation season was 580 second-feet at Arboles while the Piedras was delivering a mean flow of 380 second-feet during the same period, making a mean flow for the river at the Colorado line of 960 second-feet.

The flow from the Rio de Los Pinos at its junction with the San Juan is unknown, and but few measurements have been made at any time.

From an examination of the data available, however, it is believed that the mean flow may be safely placed at 80 second-feet.

Las Animas is the largest tributary of the San Juan in New Mexico. Its mean flow at Durango in 1896 was 855 second-feet, and it is probable that this flow reaches the San Juan below Bloomington with but little change, for, although the Rio Florida enters about 12 miles below Durango, its waters are entirely in use during the dry season for irrigation, while its surplus at other times perhaps no more than compensates for losses from seepage and evaporation below.

Rio La Plata enters the San Juan about 3 miles below Farmington. No data is available as to the flow, but it is believed to carry a mean of 50 second-feet.

These streams are all permanent in character, but the flow fluctuates with the season, depending primarily upon the melting of winter snows in spring and upon the so-called rainy season, occurring here usually in the latter part of August and in September.

Spring flow usually begins in the early part of March and reaches a maximum from May 10 to 20, thence gradually declining until the forepart of July, when it reaches the normal summer flow. The rainy-season flow, occurring in August and September, is characterized by sudden freshets which are at times of great volume, as is instanced in September, 1896, when a flow of 7,800 second-feet was observed on the Animas River.

The irrigation system in this district comprises nineteen ditches on Las Animas, eighteen on La Plata, and eighteen on San Juan.

There are also a few small ditches on Rio de Los Pinos, but here the valley is narrow and the fall heavy, every ranch having its own small ditch.

All these ditches are either private or community with the exception of "The Animas, La Plata and San Juan Canal," which has been built for speculation purposes.

There is in actual cultivation under the 19 ditches on Las Animas, 4,480 acres; under the 18 on La Plata, 3,200 acres, under the 18 on San Juan, 3,840 acres, while on Rio de los Pinos some 300 acres (estimated), or a total of 11,820 acres actually under cultivation on these streams.

This acreage could be increased to 25,000 without extension of the present systems.

On the Rio Navajo, in the northeast portion of the district, there are 750 acres actually in cultivation, with a like acreage on the Dulce. This, with 450 acres on Cañon Largo and 100 acres on Cañon Campanero, is the extent of the actual area in cultivation, or 13,870 acres in the entire district. The total land under ditch is in the neighborhood of 50,000 acres, that portion not in actual cultivation being used for pasturage; of this, at least 25,000 acres could be put under cultivation without ...ase in the present system.

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SAN JUAN VEGETABLE BOUQUET.

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CHAMA.—DISTRICT NO. 2.

Geographical location: Northern portion of the Territory, covering portions of Rio Arriba and Taos counties. Acreage irrigated, 21,700.

This district covers the drainage area of the Rio Chama with all its tributaries. It extends from the Continental Divide on the west to its junction with the Rio Grande on the east; from the Colorado line on the north to the Vallas Mountains on the south, covering in all about 2,400 square miles.

Its surface is greatly broken, being high and mountainous over the greater portion, affording a catchment area which, with the exception of the districts including the Sangre de Cristo Range, is unsurpassed.

The valleys in general are characterized as being narrow, with steep slopes, and shut in from the surrounding country by high, steep walls.

There are, however, several mesas of fine land in the northern and central portions, although they are as yet almost entirely undeveloped.

From the junction of the Chama with the Rio Grande to about 4 miles above Abiquiu the river flows through a broad valley from 1 to 2.5 miles wide and with considerable fall. This valley has been in cultivation for many years and is one of the most fertile sections of the Territory.

Above Abiquiu the river flows through a narrow canyon, there being but few small isolated tracts capable of cultivation until the Park View section is reached, where from La Puente to Los Brazos is one of the best agricultural areas in the district. Above Park View the river is confined to the canyon, affording no irrigable lands between this point and the Colorado line.

The tributaries of the Chama are some fifteen in number, and may be divided into two classes, those which flow through wide, sandy valleys and whose channels are broad near their mouths, thus affording much loss from seepage and evaporation in the lower portions, and those streams which are confined to more permanent channels and whose valleys partake more of the canyon character, thus affording comparatively little loss. Of the first class are all streams below Cebolla, while those above are of the second class.

The Chama is an exceedingly muddy stream, its waters carrying great quantities of silt in suspension. This characteristic is due entirely to the tributaries of the first class mentioned above, the waters of the second class being comparatively clear and free from silt excepting in times of freshets.

The flow of the Chama partakes of the character of that of the San Juan with the exception of the rainy-season flow. This occurs in general during the months of July and August, and is characterized by freshets of great volume which at times are very destructive to property.

Concerning the amount of water carried by the river and its tributaries, there is but little data available.

During 1895–96 the hydrographic division of the United States Government Survey maintained a gauging station at Abiquiu, but sufficient data were not obtained to warrant an estimate of the maximum and mean flow of the stream, as the bottom is of an exceedingly shifting character.

On April 4, 1889, an estimate of the flow of the river and its tributaries was made by the same division, which is here appended, as it is of value in showing the relative importance of the various streams as well as suggesting the possibilities.

It will be well to bear in mind the fact that at the time these measurements were taken the spring flow had but begun, and would not reach its maximum until the middle of May.

Summary of water flowing in the tributaries of the Chama, as measured March 26 to April 4, 1889.

	Second-feet.
1. Oso	5
2. Ojo Caliente	75
3. El Rito	33
4. Frijoles	5
5. Canones (Lower)	14
6. Canjilon	28
7. Puerco	40
8. Gallinas	12
9. Cebolla	12
10. Nutrias	10
11. Nutritas	26
12. Brazos	150
13. Canones	8
14. Willow	12
15. Little Chama	95
Total	525

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This estimate does not include the water in the main branch of the Chama above the town of Chama, which was flowing at the rate of at least 300 second-feet. The total discharge of the Chama at Abiquiu at this time was estimated to be 750 second-feet.

Irrigation in this district is more extensive than in that of San Juan, and whereas in the San Juan district the irrigated lands are principally confined to the main or trunk streams, in the Chama district the reverse is the case, by far the greater acreage being on the tributary streams in the mountains. This is explained from the fact that the streams display two distinct features in their course from the mountains to the Chama: first, an upper course characterized by deep canyons among the mountains, and second, a course characterized by wide, sandy river beds of comparatively light fall.

In the upper course there is never, or rarely, any scarcity of water, but in the lower sections along the wide valleys the seepage and evaporation are excessive and scarcity of water frequent.

The irrigated lands are usually found at the head of the valleys, taking the water from the never-failing mountain streams.

The total acreage cultivated in this district is 21,700 acres. This includes 4,500 acres between Espanola in the valley of the Rio Grande and the junction of the Chama, which is irrigated from water diverted from the Chama.

This section is called Chama Abajo.

	Acres.
Chama Abajo and Chamita to Ojo Caliente	4,500
Chama, from Ojo Caliente to Abiquiu	1,500
Chama, from Abiquiu to La Puente	225
TIERRA AMARILLA VALLEY.	
La Puente	900
Enseñada	1,650
Brazos	1,050
Park View	2,125
TRIBUTARIES.	
Canones	600
Rio Puerco	450
Rio Gallinas	150
Ojo Caliente	3,150
El Rito	1,500
Cebolla	450
Canjilon	525
Las Nutrias	375
Las Nutritas	1,500
Vallecito	150
San Antonio	900
Total	21,700

The last stream, although included in this district, flows into the Rio Grande in Colorado and should probably be placed in that district.

There has never been any shortage of water on the Chama, but it sometimes occurs on some of the small tributaries.

On El Rito the water is wholly used, there being no surplus whatsoever, and during a year of drought it is severely felt.

On the Gallinas the same conditions apply, and a shortage has also been felt on the Coyote Creek, a small branch of the Puerco.

With these exceptions there is a large surplus in all sections of this district.

While the irrigated area is 21,700 acres, the total area under ditch is about 40,000 acres, and with some slight exceptions this entire area could be brought into cultivation without any increase in the present system, while the total irrigable acreage in the district will reach 80,000 and possibly 100,000 acres.

TAOS.—DISTRICT NO. 3.

Geographical location: Central northern portion of New Mexico, covering the major portion of Taos County. Acreage irrigated, 36,240.

This district extends from the Chama district on the west to the crest of the Taos range on the east, and from the Colorado line on the north to and including the drainage of the Embudo Creek on the south.

It is characterized by the great number of small perennial streams which, rising in the high ranges on the east, debouch at about one-third the general width of the district upon the high mesas forming the central and western thirds.

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The Taos range, comprising the catchment area from which these streams derive their waters, is unsurpassed in the Territory. It ranges in altitude from 7,000 to 13,000 feet above sea level, with slopes tree-clad, and the precipitation is probably greater than in any other section of the Territory.

No general description can cover the diverse features of the various sections of this district, which must be studied in detail to afford a true conception of the conditions.

Beginning at the northern limit and passing south, the first stream reached is the Costilla. This stream passes into Colorado immediately beyond the town of Costilla, but only that portion in New Mexico will be considered.

The total irrigated area is 800 acres of which 600 are in the canyon and 200 in La Costilla proper. The water supply is ample, not over one-fourth the flow being used in ordinary years; but scarcity has been felt sometimes in June, before the summer rains have brought the rainy-season flow.

Passing south a group of small streams about Cerros is reached. These streams are the Latir, Rito Primero, Rito del Media, and Datil, whose combined flow will not exceed 20 second-feet. A small portion of the Cabresto Creek is also diverted to aid in this section, as the water supply is always scanty.

The total irrigable lands under ditch is at El Cerro, 1,500 acres, and at El Latir, 450 acres, of which all is under cultivation, or a total acreage for the section of 1,950 acres. There is no surplus water whatever from this section, all being in use, although the acreage might possibly be increased by storage.

To the south is the Rio Colorado with its main tributary, the Cabresto. On this stream the great body of irrigated land is grouped about the junction of Cabresto with the Rio Colorado at the town of Questa, and water is drawn from both streams. Here there is always a large surplus of water, although about one-fourth the normal flow is diverted across a divide in the mountains to Elizabethtown, where it is used for mining.

Notwithstanding this loss, only about one-fourth the flow of the streams is diverted for irrigation.

The total area under ditch along these streams is about 3,000 acres, while 2,000 acres are irrigable. The total irrigable acreage is probably 5,000 acres, for which there is an abundant supply of water.

South of the Rio Colorado and between it and Arroyo Hondo is a tract of land some 8 miles wide and traversed by several creeks whose waters are used for irrigation.

These are Lerma Canyon, Arroya San Cristobal, and Agua del Lobo, of which the San Cristobal is the largest.

At Lerma Canyon the acreage irrigated is about 40 acres, with no possibility of increase, all the available water supply being in use. At San Cristobal there are 500 acres actually under ditch and irrigated, but the stream is small and entirely used in serving this body of land, so that it is doubtful whether any further increase is possible. At Agua del Lobo there are 250 acres under ditch, all of which is in cultivation. The water supply is scanty, and the greatest care is necessary to carry them through the month of June. No improvement in the situation is here possible.

The Rio Hondo is next in order to the south. This stream lies in a valley at general level of from 400 to 500 feet below the surrounding country, with a general width of about three-fourths of a mile.

In the lower valley about the Arroyo Hondo there are 1,500 acres under ditch, of which 1,200 are in actual cultivation.

In the upper portion of the valley about San Antonio the irrigated acreage is about 300 acres, or a total of 1,500 acres served by the stream.

The water supply is abundant, there being at times a heavy surplus, and it is probable that the irrigable acreage served from this stream could be increased to 3,000 acres at a slight expense, while with storage it is probable that 10,000 (estimated) acres could be improved.

We come now to the group of five streams, which water the so called Taos Mesa, and uniting form the Taos Creek, which enters the Rio Grande about 12 miles southwest of Taos.

These creeks are from north to south, the Seco, Lucero, Pueblo, Ferdinand, and Rio Grande de Taos; each will be considered separately.

The Seco is peculiar in that not only is there an entire consumption of its own flow, but the Rio Hondo and the Lucero are also drawn upon to serve its land. The system is so inextricably mixed that it is absolutely impossible to assign to each the acreage irrigated by each individual stream, only the total acreage being obtainable. This is 2,600 acres actually cultivated, while 3,500 acres are under ditch.

As before stated the entire flow of the Seco is used and no further development here is possible, excepting from increased diverson from the Rio Hondo. No further diversion is possible from the Lucero without a corresponding deprivation of lands to the south.

The Lucero enters the valley from the north and waters the land between it and the Pueblo Creek, as well as a tract extending north to the Arroyo Seco.

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About one-third the entire flow is diverted toward the Arroyo Seco, while the remainder is used on the lands to the south. The acreage to the south under ditch and irrigated is considered with Pueblo Creek, as that to the north has been, under the Arroyo Seco.

The entire normal flow of the Lucero is diverted for irrigation, and no increase in the irrigable acreage served by this creek is possible, excepting by storage or a more economical use of the water at present diverted.

Pueblo Creek enters the valley some 2 miles above Taos, and is one of the largest streams in the entire district.

The lands along this creek had been cultivated by the Indians of Taos pueblo a long time prior to the advent of the Spaniards in the Territory, and in fertility and productiveness are not surpassed in the Territory. The irrigated lands although practically continuous are separated into three divisions, known locally as Pueblo, La Placita, and Ranchito.

At Pueblo the cultivation is wholly by the Indians, and the acreage is constant from year to year, 1,000 acres being under ditch and irrigated. At La Placita 3,000 acres are under ditch, but only 2,000 in cultivation, while at Ranchito 2,000 acres are under ditch with 1,500 acres in cultivation. The total for the stream is 6,000 acres under ditch and 4,500 acres actually irrigated and in cultivation. The water supply is ample, there being a surplus of at least one-third the summer flow at the time when water is most in use and the flow least.

The Ferdinand or Taos Creek enters the Pueblo a short distance below Taos.

The amount of land under ditch on this stream is about 2,500 acres, with 2,000 in actual cultivation. The entire flow of the stream is used for this purpose, there being no surplus water whatever, and in addition a part of the flow of Pueblo Creek is diverted to these lands.

Scarcity of water occurs in June in years of drought. No further improvement is possible on this stream without storage.

The Rio Grande de Taos is the most southern stream of those forming the Taos drainage. It has one tributary, the Rio Chiquito, which enters some 2 miles below the head of the valley and along whose banks there is a small amount of irrigated lands. In the valley of the Rio Grande de Taos irrigation is practically continuous on both sides of the creek, from the head of the valley to Las Cordovas, its junction with the Taos River. The main body of land, however, lies in the vicinity of Los Ranchos de Taos. There are 10,000 acres under ditch, of which but 6,000 are in cultivation.

The water supply is sufficient for about 12,000 acres in the dry season when the greatest amount is required, and could be made to serve a much greater acreage by storage.

Embudo Creek is the farthest to the south of all the streams, forming the Taos district. Its principal tributaries, from north to south, are the Rio Pueblo, Rio Penasco, and Las Trampas.

On the Rio Pueblo the land under ditch is 1,600 acres, all of which is in cultivation; of this acreage the Indians of Picuris pueblo control 600 acres. The water supply is ample, only about one-fourth of the total flow of the stream being diverted.

The Penasco has four centers of irrigation, which are, from east to west, Llano Largo, Santa Barbara, Penasco and Rio Lucio. The acreage under ditch and in cultivation is, at Llano Largo, 800 acres; Santa Barbara, 1,000; Penasco, 2,000, while at Rio Lucio 800 acres are served, or a total of 4,600 acres from the entire stream.

The flow of the Penasco is in excess of the service required, and after El Llano, Chamisal, and all the other demands have been deducted, there is still a surplus of about one-fourth the total flow of the stream.

At El Llano and Chamisal creeks there are, respectively, 2,500 and 3,000 acres under ditch and in cultivation; but the water supply is always short and the Penasco is drawn upon to supply the deficiency.

On Las Trampas Creek the acreage under ditch is divided as follows: At El Valle, 500 acres; Las Trampas, 1,500; Vallecito, 100 acres, all of which is under irrigation. This, with 300 acres at Ojo Zarco, for which water is diverted from this creek, makes the total of 2,400 acres, with an estimated surplus of one eighth the total flow of the stream.

On Embudo Creek between Las Trampas and its junction with the river the acreage under ditch and in cultivation is 800 acres.

Santa Fe.—District No. 4.

Geographical location: Central northern portion of New Mexico, embracing portions of Taos, Santa Fe, and Bernalillo counties. Acreage irrigated, 13,150.

This district embraces the drainage of all streams from Embudo Creek on the north to and including the drainage of the Gallisteo on the south, and from the crest of the Santa Fe Mountains on the east to the valley of the Rio Grande on the west.

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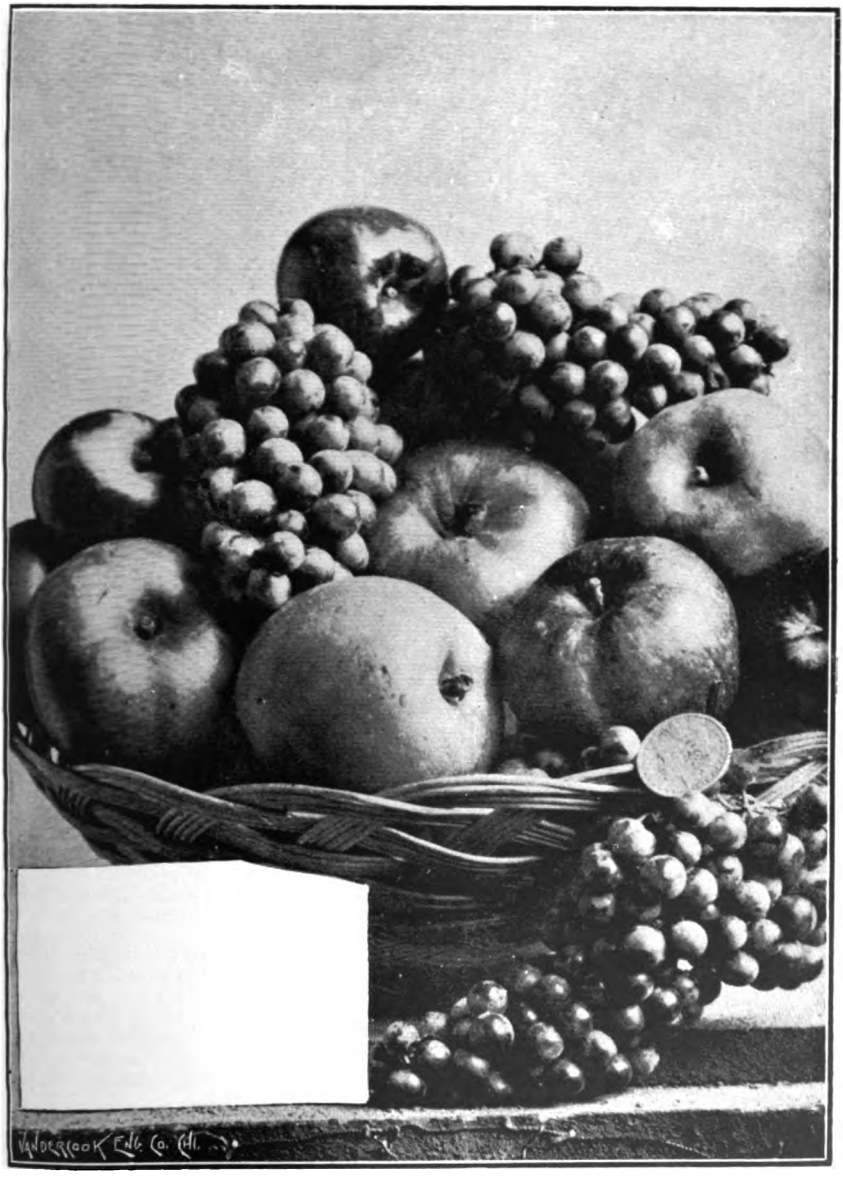

Basket of Santa Fe County Fruit.

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The district is exceedingly broken, and is characterized, as is the Taos, by the many small streams rising in the mountains and flowing westward toward the Rio Grande.

These streams are perennial in the upper portion of their course in the mountains, and the irrigated sections of the district are confined to the small mountain valleys and the immediate portion of the plains adjacent to the point where they leave the mountains and pass upon the plains.

Although perennial in their upper course it is exceedingly rare that any portion of the normal flow during the months of June, July, August, and September, with the exception of the Rio Santa Cruz and Pojuaque, ever reaches the Rio Grande, for in general the major portion of the waters is used for irrigation, and what small surplus of the normal is left is lost by seepage and evaporation in the many miles of wide, sandy river bed lying between the foothills and the Rio Grande.

In the so-called rainy season, which occurs during July and August, all these streams are subject to frequent freshets; and in common with other districts in the Rio Grande, drainage contributes materially to the flow of that stream.

The Santa Cruz, the most northerly stream in this district, rises in the Santa Fe range and flows in a generally northwesterly direction to the point where it leaves the mountains at Potrero, thence westward to its junction with the Rio Grande.

Irrigation along this stream is confined to that portion lying between Potrero, where the valley widens, and the Rio Grande. The irrigated lands occupy the valley proper and extend almost continuously on both sides of the river between the limits mentioned.

The total acreage under ditch and served by this stream is 2,500 acres, of which 900 acres are wholly within the upper portion of the Santa Cruz Valley. Although drawing its water supply from the Santa Cruz, the remaining 1,600 acres, occupying the lower Santa Cruz Valley, and lying along the eastern edge of the Rio Grande Valley to the north and south of the junction of the Santa Cruz, is in reality a portion of the Espanola Valley of the Rio Grande.

Practically all the land under ditch is in actual cultivation.

The flow of the stream during the fall, winter, and spring is large and is more than sufficient for all demands upon it up to about June 1. During June, July, and August the entire normal flow is diverted to the land, and at times there is scarcity in the supply, but relief is had in the freshets which occur regularly during these months.

It may be said that no further increase in the irrigable acreage is possible without storage, but there are good reservoir sites in the canyon which could be improved at little expense.

To the south of the Santa Cruz is Las Truchas. This stream is of minor importance, its flow being very small. The area irrigated on this stream is about 150 acres, for which the supply is sufficient. What little surplus water there is at times is lost by seepage and evaporation a short distance below the town of Truchas, no flow reaching the Rio Grande excepting during heavy freshets.

The Nambe or Pojuaque is the next in order to the south. This stream is smaller and of much less importance than the Santa Cruz, but with its tributary, the Tesuque, supports examples of irrigation antedating the Spanish occupation.

The irrigated lands are confined to the rich bottoms on either side of the stream from a point one-half mile above El Salto del Agua to the mouth of the river at the Rio Grande. Here, as in the case of the Santa Cruz, the water is used on the lands of the Rio Grande Valley proper at and to the south of the pueblo of San Yldefonso.

The total acreage under ditch, which is also that in actual cultivation, is 1,800 acres, including that portion of the valley lands of the Rio Grande served by this stream.

A short distance below the town of Pojuaque, the Tesuque enters from the south. This stream is bordered on either side from the fork of Bishops Creek to its junction below Pojuaque by small irrigated tracts, the largest body of land lying in the vicinity of Tesuque pueblo.

The total acreage under ditch is 1,200 acres, all of which is in cultivation. The water supply on the Nambe or Pojuaque is ample at and above the town of Pojuaque, but below this point there is a chronic shortage.

At San Yldefonso the Indians have reinforced their supply by bringing water from the Rio Grande through the Hobart ditch, but the lands along the lower reaches of the river depend, during July and August, upon the freshets which occur in these months.

During the fall, winter, and spring there is a large surplus which might be stored above El Salto del Agua at a small cost, and would increase irrigable acreage by at least 2,500 acres.

The water supply of the Rio Tesuque is similar in character but much less in quantity, there being a sufficiency above the pueblo of Tesuque but a greater scarcity below. Even at Tesuque a scarcity occurs at times. Here, too, rainy-season flow or freshets are depended upon for the maturing of crops.

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The question of storage on this stream is uncertain, no sites being known; but it is only proper to state that no examination has been made.

South of the Nambe is the Rio Santa Fe.

This stream rises in a series of three small lakes lying below the crest of Lake Peak at an altitude of about 11,000 feet. It flows in a southeasterly direction and leaves the mountains about 3 miles east of Santa Fe. From this point to its junction with the Rio Grande it flows through gently sloping plains with the exception of a short stretch where it breaks through La Bajada Canyon.

Its waters have been in use for irrigation from the first settlement of the city by the Spaniards, indeed, even prior to that time by the Indians of the ancient pueblo, which occupied the site of the present city.

The irrigated lands are in two sections—the first extending from Ewing's Ranch, about 7 miles above Santa Fe, to Agua Fria, some 6 miles below, while the second extends from Cieneguilla to La Bajada, on the lower stretch of the river.

On the upper section, in the canyon above the reservoir of the Santa Fe Water and Improvement Company, irrigation is confined to small isolated patches, the total aggregating 100 acres under ditch and in cultivation. From this point to some 2 miles below the city is the largest body of land in cultivation on the stream, the acreage under ditch being 2,400 acres, all of which is in cultivation. About Agua Fria the acreage is 800, making a total of 3,300 acres on the upper portions of the stream.

From Cieneguilla to La Bajada, including La Golandrina Springs and Alamo or Bonanza, 1,100 acres are in cultivation, this being the acreage under ditch. La Golandrina Springs and Alamo or Bonanza, however, do not depend upon the Rio Santa Fe for water, but upon springs, the flow of which is constant and wholly in use.

The cultivation along the Rio Santa Fe is as intense and the duty of water higher, perhaps, than in any other sections of the Territory on account of the scarcity of water. The entire flow of the stream has been in use for years, and it is only by the most careful and economical use of water by the cultivators that crops are brought to the high state of perfection for which they are noted.

Storage must be resorted to before any increase in the acreage cultivated can be looked for. Many reservoir sites are to be found in the canyon and along the arroyo.

In 1892 and 1893 a dam was constructed across the river some 2¼ miles above Santa Fe with an impounding capacity of about 500 acre-feet. The primary object of this enterprise was the city supply, but a small portion is used in pipe irrigation. There is still a surplus of the flow of the stream amounting to about 2,500 acre-feet. This surplus occurs, however, in the form of rainy-season flow or flood flow and early-spring flow and is not available for irrigation without storage.

Along the lower portion of the river, from Cieneguilla to La Bajada, there is always great scarcity of water, except during the early spring and at time of freshets.

This section relies more upon springs in the river bed above La Bajada Canyon than on the flow of the river.

It is very seldom that the flow of the river reaches the Rio Grande excepting in times of very high spring flow and in time of freshets. Usually what small flow may occasionally pass La Bajada is lost in seepage and evaporation in the wide sandy bed between that point and the Rio Grande.

The Rio Santa Fe has one tributary, the Arroyo Hondo, along the headwaters of which irrigation is practiced to a very limited extent. The flow of this stream is exceedingly small and no water is ever delivered to the Rio Grande except in time of freshet.

The irrigated lands are wholly along the upper stretches and are in small detached areas in the vicinity of Rodriquez and Gonzolez ranch, not more than 200 acres being in cultivation.

No further increase in this acreage is possible, even with storage, as the drainage area above these points is exceedingly small, and freshets occur only at long intervals.

South of the Rio Santa Fe is the Rio Gallisteo. The water supply of this is small and precarious, and, excepting in time of flood, no flow ever reaches the Rio Grande.

Irrigation is wholly confined to the upper portions of the streams and to the small valleys opening into it, the major portions being in the vicinity of Gallisteo.

From the head of the stream at Glorietta Mountain to Cerrillos, between which points are located the irrigated areas, there are 1,200 acres under ditch, while on the Arroyo San Cristobal from Ojo del Baca to its junction with the Gallisteo there are 400 acres, or a total of 1,600 acres under ditch and in cultivation along the stream and its tributaries.

This acreage can not be increased, as the entire flow is in use. Freshets occur frequently during June, July, and August, and are at times of great volume, but no storage sites are known.

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This completes the list of streams in the Santa Fe District, but there are some small tracts located in the Sandia Mountains and utilizing the flow from some small springs in the vicinity.

These areas are incapable of improvement, as the water supply is constant and entirely in use.

The acreage is as follows:

	Acres.
Las Huertes and Placitas	300
Uno de Gato	100
Chimal	100
San Pedro	150
Tijon	150
San Antonio and Gutierrez	200
Tijeras	300
	1,300

With the exception of the Tijeras these localities are not even subject to freshets, owing to the limited drainage area above them.

The Tijeras, however, at times discharges large volumes of flood waters and has one or more reservoir sites, but owing to the great amount of débris brought down in time of flood storage is probably impracticable.

JEMEZ.—DISTRICT NO. 5.

Geographical location: Central northern portion of New Mexico, covering portions of Rio Arriba and Bernalillo counties. Acreage irrigated, 4,500.

South of the Chama and west of White Rock Canyon lies the Jemez district. The catchment area of this district is embraced between the west slope of the Jemez Mountains, which reach an altitude of 11,000 feet, and the eastern slopes of the Nacimiento, whose summits are somewhat lower.

The precipitation on these slopes is generally heavy, and is collected by the many small streams forming the Jemez. These streams flow through long, narrow, but very fertile valleys in their upper reaches, and the water supply is excellent, but from about the pueblo of Jemez south to its junctions with the Rio Grande the river flows through a sandy, barren country; its bed is wide, and most of the water is lost in seepage and evaporation, leaving but little if any to reach the Rio Grande, excepting in early spring and in time of floods.

There is an abundant supply of water above San Ysidro, but below this point there is great scarcity, so great, in fact, the Indians of the pueblo of Santa Ana have been compelled to abandon their farming lands on the Jemez and take up land on the Rio Grande, some 10 miles distant.

The acreage irrigated in this district is about 4,500 acres, and it may be said this can not be increased excepting by storage. It is but a small percentage of what could be brought under cultivation by improved methods, for during the early spring and in time of floods in June, July, and August, there is a large surplus of water, which, as there are good reservoir sites available, might readily be conserved.

PUERCO.—DISTRICT NO. 6.

Geographical location: Central western portion of New Mexico, covering parts of Rio Arriba, Bernalillo, and Valencia counties. Acreage irrigated, 13,980.

This district includes the entire drainage area of the Rio Puerco and its tributaries, extending from the Chama and Jemes districts on the north to the divide between the Puerco and Salado on the south. Its eastern limit is the foothills bordering the Rio Grande Valley, and the western the Continental Divide.

The character of the country is hilly and broken. Its altitude ranges in general from 4,000 to 7,000 feet, and the precipitation is very light, being about 7 inches annually, and as a consequence there are but few perennial streams.

The major part of the precipitation occurs usually during the months of June, July, and August in the form of very heavy rains or cloud bursts, resulting in torrents which for volume and duration are not exceeded in the Territory, excepting on the lower Pecos.

At Rocky Ford floods discharging a maximum of 32,000 second-feet have been observed. Such floods, however, are unusual, this being the maximum, but freshets discharging from 2,000 to 3,000 second-feet are comparatively frequent during the rainy season.

Much the greater portion of this district never furnishes water to the stream, the precipitation that reaches the arroyos being lost by seepage in their sandy beds.

The Rio Puerco runs from north to south through the eastern portion of this dis-

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trict, receiving its entire perennial supply through a number of small streams from the western slopes of the Nacimiento Mountains, but a small amount, however, reaching the main stream, which is dry south of Casa Salazar from the time spring flow ceases until about the latter part of November, with the exception of times of freshets.

From Casa Salazar to the mouth of the Puerco there are no irrigated lands excepting at San Ignacio, where 500 acres are in cultivation.

In years past most of the rich bottom lands for 40 miles south of Casa Salazar were under irrigation, but within the last fifteen or twenty years the Puerco has been cutting out its bed until now it flows in a tortuous channel with precipitous banks from 30 to 40 feet below the level of the valley, rendering it impossible with the crude methods of the Mexican settlers to raise the water sufficiently to bring it upon the lands, and causing the abandonment of the entire country, with the exception of the small acreage before mentioned at San Ignacio.

On the small streams—the San Jose, La Java, Los Pinos Creek, El Rito La Leche, and Rito del Nacimiento, at the head waters of the Puerco—irrigation is confined to small patches along the sides of the narrow valleys and will aggregate 700 acres.

From the east boundary of the San Joaquin Grant to Casa Salazar, between which limits irrigation extends, the irrigated areas are not continuous, but are located about the many small settlements, the acreage aggregating 2,980 acres.

Outside the above acreage the irrigated lands are scattered over the district wherever water may be found, the principal acreage being on the San Jose, which is the main tributary of the Puerco and its feeders. This stream rises on the Continental Divide and, flowing southeast, joins the Puerco about 4 miles east of San Jose station.

The normal flow is exceedingly small and is wholly consumed by the irrigation along the stream. During the rainy season, however, it discharges enormous quantities of flood water, and it is only by the conservation of their waters that the irrigable acreage can be increased.

On the upper portion of the stream, at the junction of the Cottonwood and Blue Water creeks, the Blue Water Land and Irrigation Company has constructed a dam 42 feet high, impounding water for the irrigation of their lands some 12 miles below. From this reservoir 2,000 acres are irrigated. There are no other storage systems in the district.

The principal irrigated acreage on the river is between Acoma and Laguna, and about 3,900 acres are served by water taken from the San Jose. About El Rito and Massita 800 acres are under irrigation, and these points mark the limit of the irrigated acreage down the river.

At Juan Tafoya about 200 acres are cultivated from springs in the canyon on the upper Salado, no further increase being possible.

In the vicinity of San Mateo about 600 acres are also served from springs, this acreage consuming the entire flow. In addition, 2,300 acres are in cultivation in detached areas throughout the district, this acreage consuming the entire water supply, with the exception of early spring flow and flood flow occurring during the rainy season.

Only by storage can this acreage be increased. There are a number of reservoir sites available, but only a careful study of the water supply can determine the possibilities of the district.

Black Range.—District No. 7.

Geographical location: Eastern half of the southwestern quarter of New Mexico, embracing portions of Socorro, Sierra, and Grant counties. Acreage irrigated, 9,270.

This district embraces all the drainage area from the western edge of the Rio Grande Valley to the Continental Divide and from the Puerco to the Mexico line.

It is a rough and broken country and the water supply exceedingly scant, the precipitation ranging from 4 to 6 inches during the summer, while the total per annum is probably in the neighborhood of 10 inches.

Irrigation is generally confined to the valleys of the few small streams flowing eastward toward the Rio Grande and to the valley of the Mimbres. None of these, however, discharge water to the Rio Grande, excepting during seasons of excessive snow fall or during very heavy floods.

Although the water supply is scanty, it is constant, and probably on this account a higher duty of water is reached in this district than in any other portion of the Territory.

On the Rio Salado 600 acres are irrigated, this consuming the entire water supply, with the exception of the excessively heavy freshets occurring during the rainy season.

On the Rio Alamosa 1,200 acres are irrigated in the vicinity of Canda de Alamosa, Monticello, and above.

The Cuchilla Negro serves 1,050 acres at and above Cuchilla. There are irrigated

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from springs in the Rio Palomas, 540 acres; from springs in Las Animas, 500 acres; from springs in the Rio Perches, 100 acres; from springs in the Cienega Apache, 120 acres, and from springs in Barenda Creek, 160 acres. This acreage consumes all the water at several points, with the exception of the flood flow.

The Mimbres Valley is the seat of the largest irrigation areas in the district, the principal acreage being on the upper portion of the stream and its branches.

The total acreage under irrigation is about 5,000 acres, and in serving this body of land the flow of the stream is practically consumed.

Floods occur during the rainy season and of great volume, but this stream has no other outlet; in times of flood discharging its waters on the Florida Plains, where they are lost in the sands.

Here—particularly near Deming—is a region of country known to be 50 miles wide and 100 miles long from north to south, where an inexhaustible supply of water can be reached by wells no more than 50 feet deep. As this phase of the question is beyond the scope of this report, further mention of the matter has been omitted.

Reservoir sites are found through this district, and storage must be resorted to before further improvement may be had in this district.

COLORADO.—DISTRICT NO. 8.

Geographical location: Southwestern portion of New Mexico, covering the western portions of Bernalillo, Valencia, Socorro, Sierra, and Grant counties. Acreage irrigated, 17,000.

The Colorado district embraces all the land west of the Continental Divide and south of the San Juan.

The topography of the country is greatly broken, being occupied by the Black Range, Mogollon, Tularosa Mountains, in which rise the head waters of the Gila, Salt, and Little Colorado rivers of Arizona. The principal streams are the Gila, San Francisco, and Zuni, which are perennial within the Territory.

No data is available as to the flow of these streams, but at present the water supply is sufficient for the acreage irrigated, although there has been some shortage during very dry years.

The irrigated acreage is also uncertain, but is probably about 9,000 acres on the Gila, 6,000 on the San Francisco, 1,000 on the Zuni, with 1,000 acres scattered along the head waters of small streams in detached areas.

Reservoir sites are to be found along the streams, and it is probable that storage must be resorted to before any material increase in the irrigated areas may be had.

As the streams are subject to frequent and violent floods, it is probable that the flow is in excess of the economical storage capacity of the reservoir sites available.

CANADIAN.—DISTRICT NO. 9.

Geographical location: Northeastern portion of New Mexico. Acreage irrigated, 36,000.

This district embraces the drainage area of the Canadian River and its tributaries from the Colorado line south to the point where it enters the State of Texas and from the crest of the Santa Fe and Taos ranges on the west to the eastern limit of the Territory, covering all of the counties of Colfax, Mora, and Union, and the major portions of San Miguel and Guadalupe.

As in the case of most of the other districts, it is characterized by the many small streams which, although perennial in their upper course, are usually dry along their lower stretches during the greater portions of the irrigating season.

The Santa Fe and Taos ranges, in which these streams have their sources, afford one of the best catchment areas in the Territory, and the flow of the streams heading in these mountains is constant and always to be depended upon. As a consequence, the irrigated area is almost wholly confined to the valleys of these streams in the western portion of the district, while the eastern portion, being in reality a part of the Great Plains and dependent for its water supply upon the summer rains (and therefore very uncertain), is almost wholly devoted to grazing.

The various streams will be considered in their order from north to south.

The Chico Rico has its source along the southwesterly slope of the Raton Plateau, flowing thence in a generally southern direction and joining the Canadian River about 4 miles above the town of Dorsey.

The flow of this stream is small but permanent, probably not exceeding 20 second-feet, excepting during floods. Floods occur during June, July, and August, and are of great volume.

The normal flow of the river is wholly consumed, a portion being impounded by a dam some 8 miles above Raton and carried by a pipe line to that town for domestic supply, while the surplus is used for irrigation in the Chico Rico Valley. The acreage in cultivation is unknown, but is probably about 1,000 acres.

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No further increase in this acreage is possible without storage, but good reservoir sites are in the vicinity, and at a comparatively slight expense sufficient water could be impounded to irrigate 5,000 acres in addition.

The Vermejo rises in the extreme northwest corner of the district, in the Culebra or Costilla Range, flowing southeast to a junction with the Canadian River some 6 miles below Maxwell City. Its tributaries are the Caliente, the Saltpeter, and the Van Brimmer.

The flow is permanent, the mean being about 70 second-feet during the irrigation season, from April to September, inclusive, and about 10 second-feet during the nonirrigation season.

The stream is subject to frequent and heavy floods during June, July, and August, measurement having shown a discharge at these times of 900 to 1,000 second-feet, amounting to 2,000 acre-feet in twenty-four hours. On the upper portion of the stream there are about 100 small individual ditches, serving small tracts. There are also about 9 other individual ditches between Dawson's and the Montgomery Ranch that are much larger, having a capacity of from 5 to 15 second-feet each.

Of corporation canals there are two, belonging to the Maxwell Company, each with a capacity of 400 second-feet.

The acreage irrigated under these systems is 11,000 acres, of which 3,000 acres are irrigated on the upper portions of the river by the 100 small ditches, 3,000 by the 9 larger ones between Dawson's and the Montgomery Ranch, and 5,000 under the Maxwell's Company ditches to the north of Vermejo.

The normal supply of the stream is entirely consumed by the present system.

The Maxwell Land Grant Company has resorted to storage, having constructed some eight or ten reservoirs, with a combined capacity of 6,000 acre-feet.

Under the individual ditches there is one small reservoir of 50 acre-feet capacity, but with these exceptions the ditches rely wholly on the river flow. This flow is always ample for all purposes in the spring, and in fact there is a good surplus, but during the later part of the season there is always a scarcity.

Reservoir sites are so located as to be capable of every economical improvement, and it is probable that 10,000 acres additional will ultimately he brought under cultivation by this means.

The Cimarron River, one of the largest streams in the district, is formed by a number of small streams originating in the Taos Range, and flows in a general southeasterly direction to a junction with the Canadian near the southeast corner of the Maxwell Grant. Its principal tributaries are Ute Creek, Ponil, Cimarroncito, Uracca, and Rayado, in all draining about 40 miles in length of the eastern slope of the Taos Range.

The stream is perennial, and its mean flow from March to July, inclusive, is about 500 second-feet. In August and September this flow decreases gradually, the mean flow in the nonirrigation season being only about 50 second-feet; the total annual discharge of the stream reaches from 150,000 to 200,000 acre-feet. On this stream freshets occur only occasionally, there being at times periods of several years intervening between them.

There are thirteen individual ditches and one corporation ditch on the Cimarron and its tributaries, divided as follows:

On the Cimarron the Springer Ranch ditch, capacity 150 second-feet; two smaller ditches on the same ranch carrying 20 and 40 second-feet, respectively, and two ditches near the town of Cimarron carrying 20 second-feet each.

On the Ponil there are three ditches, carrying 10 to 20 second-feet each.

On the Rayado there are three ditches, carrying about 20 second-feet each.

On the Cimarroncito there are two ditches, carrying 10 and 20 second-feet respectively.

The corporation ditch is the Maxwell Land Grant Company's Springer ditch, with a capacity of 400 second-feet.

In the spring of the year there is a surplus of water over the amount required for all the ditches, but during the late summer and fall there is but very little water for any of them.

The Maxwell Land Grant Company has constructed four storage reservoirs, the largest of which, the Springer reservoir, covers an area of 300 acres and has a capacity of 5,000 acre-feet; the others have a combined capacity of about 1,000 acre-feet.

The land irrigated under these systems is about as follows: 1,000 acres under the small ditches along the Cimarron bottom; 500 acres under the Ponil ditches; 1,000 acres under the Rayado ditches; 2,000 acres under the Maxwell Company's ditch, and 2,500 acres under the Springer Ranch. The whole consumes about 25 per cent of the total annual discharge of the Cimarron, leaving a surplus of from 100,000 to 150,000 acre-feet passing down the Canadian to the gulf each year.

This entire flow is capable of conservation, as there are a number of good reservoir sites at different points in the Cimarron drainage.

Under the Springer Ranch ditch one reservoir site can be improved with an

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impounding capacity sufficient to irrigate 3,000 acres. On the north side of the Cimarron River are two large basins with a storage capacity of about 10,000 acre-feet. In the Moreno Valley, at the head of Cimarron Canyon, is situated a reservoir site where a dam 125 feet high will form a reservoir covering 2,500 acres and with a capacity of 100,000 acre-feet. Smaller sites are to be found in Ponil, Cimarroncito, Uracca, and Rayado canyons.

About 100,000 acres could be irrigated from the Cimarron system and 140,000 acres in all could be irrigated by utilizing all the available reservoir sites in which the surplus water could be stored.

The Mora River is formed by a number of small streams rising in the Mora and Las Vegas ranges. In its eastern course to its junction with the Canadian it receives the waters of the Coyote, Cebolla and Sapello, all of which are important tributaries.

These tributaries drain about 40 miles in length of the eastern slope of the mountains and play an important part in the determination of the stream flow.

The entire normal flow of the Mora and its tributaries during the irrigating season is consumed in irrigation, there being no surplus waters whatever, except during the nonirrigation season and during the season of freshets. In fact there is a chronic scarcity of water, which in the case of the Coyote, Cebolla, and Sapello occurs even as early as April.

This want of water has been felt only within the past fifteen years and is due, not to any increase in the acreage cultivated, but to the cutting of the timber on the mountains in which these streams rise. In the words of an irrigator of thirty-five years' experience in this section, "If the destruction of timber along the head waters of the streams is not stopped, this section of New Mexico will soon be another Spain."

As it is, each year the freshets are increasing in frequency and volume, the period of drought becoming longer and the scarcity of water more keenly felt. Already many acres of the most valuable and fertile farming lands have been abandoned from this cause.

In seeking relief from these conditions two ditches have been built, taking water from the Rio del Pueblo or Picuris Creek in the Taos district and diverting it through passes in the mountains. One is carried into the Agua Negra Creek and the other into the San Antonio, both being small tributaries of the Mora Creek.

The diversion of the water by these two ditches is not continuous, being resorted to during the periods of greatest scarcity.

All the ditches along these streams are either community or private, and the acreage irrigated on the several streams as follows:

	Acres.
Ocate	2,000
Coyote	2,300
Cebolla	2,200
Manuelitos	2,000
Sapello	2,600
Mora	5,700
Total	16,800

Storage has been resorted to in but one instance, and that on the Sapello about 3 miles above Watrous, where by individual effort diversion has been made to a series of small lakes to the south of the stream, which are utilized as reservoirs. The combined capacity of these lakes is sufficient for the irrigation of about 500 acres.

There are four reservoir sites along these streams, but too large for their improvement to be undertaken by individual effort. The first is on the Mora River, where, by a 60-foot dam in a narrow gap above La Cueva, a reservoir would be formed covering 620 acres, with a capacity of 5,400 acre-feet.

At Buena Vista, where the Mora River enters a narrow canyon, a dam of 90 feet in height would form a reservoir covering 1,770 acres and with an impounding capacity of 38,000 acre feet. The town of Buena Vista would be wholly submerged by the construction of this dam. At the junction of the Manuelitos Creek with the Sapello a dam of 100 feet in height would cover 1,037 acres and give an impounding capacity of 41,000 acre feet.

In the Cherry Valley, below Watrous, is a natural reservoir requiring no dam, which would be filled by a canal from the Mora River. Its area is about 800 acres, with an impounding capacity of 15,000 acre feet.

The question of the water supply for these reservoirs is problematical and only capable of determination by careful investigation. It is probable that only flood waters or rainy-season flow may be depended on to fill them, with perhaps a small amount of the nonirrigation-season flow. As before stated, however, the floods are frequent and of great volume, probably as high as 5,000 second-feet.

From the junction of the Mora to the eastern limit of the Territory the Canadian

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receives no tributaries worthy of the name. There are a number of creeks (so called) at Ute Creek, the Pajarito, etc., but these are not perennial in any sense and it is but very seldom that they are even subject to floods. At points widely separated water is at times found in pools in the bed of the stream.

After a careful investigation of this portion of the district I have found only 80 acres in cultivation, and that along the Ute Creek.

Two hundred acres is probably the amount of irrigated land in the Canadian district not included on the streams mentioned above.

PECOS.—DISTRICT NO. 10.

Geographical location: Southeastern New Mexico, covering all of the counties of Chavez, Eddy, and Lincoln, and portions of Mora, San Miguel, Guadalupe, Valencia, Dona Ana, and Socorro. Irrigated acreage: 54,320.

With the exception of the Rio Grande, the Pecos is the most important stream in the Territory. Its length is so great and its conditions so varied that it has been deemed advisable to consider it in two sections, the Upper Pecos extending from the head waters to Roswell, and the Lower Pecos extending from Roswell to the south boundary of the Territory.

The river rises on the eastern side of the Santa Fe range and flows for a while as a typical mountain stream through narrow valleys and deeply cut gorges; then, leaving the tilted rocks, cuts the horizontal strata of the mesa country, this horizontal character of the rocks prevailing throughout the Pecos Valley. Among the sandstones the country is eroded and broken by arroyos, and the amount of agricultural land is necessarily small.

Below Fort Sumner, however, the topography of the valley changes. The canyon-like walls disappear and are replaced by low, rolling hills. The ascent from the river on each side becomes more and more gentle toward the south until, near Roswell, there is an imperceptible gradation from the flood plain to the prairie, this change in the topography being due to the change in the character of the rocks—limestone gypsum—prevailing throughout this fine agricultural land. Arroyos and gulches become rare, and canyons are practically unknown, the passage from canyons to prairie land being very gradual.

The drainage of the Lower Pecos is in New Mexico and is very imperfect, and there are broad tracts of country having no surface drainage whatever. The water sinks into the limestone rocks and establishes an underground drainage. The consequence of this is the formation of numerous shallows—"dry lakes"—which are in reality sink holes, many of these draining large areas. These contain water each year, and it is a constant surprise to the people of the country that they do not leave an alkaline crust upon disappearing, as would result if the water escaped by evaporation. East of the Pecos is the rolling prairie country of the Staked Plain, and to the west the White and other mountain chains rise out of the broken plain.

The main Pecos is formed by the confluence of the Gallinas with the Pecos at La Junta. Water flows perennially in these streams, at least as far down as the Atchison, Topeka and Santa Fe Railroad, but between this line and La Junta the water entirely disappears by evaporation and seepage during many months of the year. On January 30, 1889, the bed of the Pecos at Las Colonias was so dry that a well 15 feet deep barely furnished the water supply for the stock and citizens of that town. A mile or two above Eden some small springs flow into the Pecos, and from this point the river channel constantly contains water. The river valley shows signs of powerful erosion, due to the floods of the spring and summer months. North of Puerta de Luna the river has a rapid slope and is kept within its banks in time of flood, but below this point the water becomes muddy. In time of flood it overflows the flood plains extensively, but in low water meanders about among the sand bars in the river bed. Above Agua Negra Chiquita, near Santa Rosa, the water is practically free from alkali, but this stream and every one south of it add to its alkaline character.

The most important tributaries of the middle Pecos, because of the constant source of supply, are the Agua Negra and Agua Negra Chiquita, entering just above Puera de Luna. The latter, on the east side of the river, receives an unfailing supply of water from two alkaline springs. The smaller rises out of the ground in a canyon about 3 miles from the Pecos and carries, it is estimated, 6 second-feet. The larger spring has its source about a mile and a half from the Pecos, at the base of a low sandstone cliff on the edge of an alkaline marsh. It is remarkable for its size and depth, the basin of the spring having a diameter of about 70 feet, and a stream of water flows from it carrying about 15 second-feet, receiving additions from numerous small springs on the way through the marsh to the Pecos.

The Agua Negra flows from the Canyon Pintada, a very long arroyo on the west side of the Pecos, draining a large area of Mesa country on the east side of the Manzano Mountains. During the summer rains, when great floods of water rush down canyon, it is reported that little or none reaches the Pecos through the canyon,

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IRRIGATED EGYPTIAN CORN IN PECOS VALLEY.

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the greater part sinking into the arroyo bed, at one point, it is said, actually flowing into the ground through a hole. Several springs appear at various places, but they soon sink into the sand.

About 3 miles from the mouth of the canyon a large and constantly flowing spring supplies a stream of water of about 7 second-feet. This may be in part the water which disappears farther up the canyon, but its constancy would seem to indicate some additional and more distant source. It is a clear, alkaline water, which from its black color has been called Agua Negra by the Mexicans.

These two streams and numerous smaller springs furnish the Pecos with a considerable body of water.

At Puerta de Luna the river in early February is usually 150 to 200 feet wide and 2 feet deep in places, with an average depth of one-half foot or less and a velocity of not more than 3 feet per second. Its bed is of changing sand and is fully 200 yards wide between the flood plain banks, showing that powerful floods must fill the river at times when it overflows its banks.

It is a treacherous stream, more difficult to control than even the Rio Grande.

Near Puerta de Luna it is continually encroaching upon its banks and portions of several farms have been washed away within a few years.

Excepting occasional small springs from the Agua Negra and the Arroyo Yeso there are no living tributaries to the Pecos below Fort Sumner on the west side for a distance of 50 miles. The Yeso carries a small body of water of not more than 2 or 3 second-feet.

Various arroyos, creeks, and springs of alkaline water flow into the Pecos between the Yeso and the Springer River at Roswell, and these few carrying mere threads of water.

On this portion of the river irrigation is principally confined to the Gaillinas, Tecolate, and Upper Pecos. On the Gallinas the major portion of the irrigated land lies between the Hot Springs and Pecos Creek, a small branch entering from the north about 3 miles below Las Vegas.

All the ditches are either private or community with one exception, that being a small ditch leaving the river in the vicinity of the Hot Springs and having a length of 3 miles. This ditch was incorporated and built about 1890. The land in cultivation under the community and individual ditches within these limits is about 2,500 acres, with 400 acres under the corporation ditch. Along the lower portion of the stream all ditches are community, and the irrigation is divided as follows:

	Acres.
Los Villas	200
Concepcion	200
La Lindera	400
Los Torros	200
Chaperito	600
Gallinas Springs to mouth of river	300
Total	1,900

or a total of 4,800 acres along the Gallinas River. The water supply is entirely in use, and no increase in the irrigated acreage is possible excepting along the upper portion in the vicinity of Las Vegas. Here freshets occur during June, July, and August, and the conservation of these waters is the only possible solution of the problem.

The Tecolote lies between Gallinas and the Pecos, and is unimportant, there being but a small flow even in its upper portion. But 200 acres are irrigated along this stream, and this is not susceptible of increase.

Along the head waters of the Pecos irrigation is practiced to a considerable extent, there being about 4,000 acres in cultivation above the town of La Cuesta at the head of the canyon. From the mouth of the canyon, a short distance above Anton Chico to La Junta, the junction of the Gallinas, 1,700 acres are under irrigation, while from La Junta to a point about 5 miles below Las Colonias the acreage is 500 acres. By the end of August the water fails in the river at this point and there is little, if any, until the following April.

About 5 miles below Las Colonias the canyon walls come close together, and there is no irrigable land for 15 miles or until Agua Negra Chiquita is reached. Here the valley broadens out again to a width varying from a half mile to 2 miles or more.

Near Eden there is a large spring from which two ditches are taken, irrigating 100 acres. On the west side of the Pecos there is a ditch taking water from the Agua Negra Chiquita and irrigating 700 acres.

At this point the entire flow of the Pecos is in use and great scarcity is felt during the irrigation season. Puerta de Luna practically marks the limit of irrigation down the river, there being but little between there and Roswell. There is an occasional small patch irrigated by a spring or private ditch, but not more than 200 acres are cultivated on this portion of the river.

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The Pecos in the vicinity of Roswell has discharged during the irrigation season of from 150 to 20,000 second-feet, the latter amount being due to floods occurring during June, July, and August. During the nonirrigation season the flow averages about 200 second-feet. There are six important sources of water supply augmenting the flow of the Pecos at this point. They are the Rio Hondo, the Berenda rivers, north, middle, and south, and the Spring rivers, north and south.

The Rio Hondo has its source in the White Mountains in Lincoln County, and is exceedingly variable in character, the flow ranging from 0 to 1,000 second-feet in time of floods, although perennial in the upper course. During the nonirrigation season the flow in the vicinity of Roswell is about 100 second-feet. The water being wholly appropriated along its head waters, no flow is found along the lower reaches of the stream excepting during times of flood.

The Berenda and Spring rivers all have their sources in small ponds supplied by perennial springs and located in the midst of a prairie within a few miles of each other. Their flow is constant, there being scarcely any variation during the year. Both the Berenda rivers and Spring River, north, empty into the Hondo before reaching the Pecos, but Spring River, south, flows directly into the Pecos.

The discharge of these streams is as follows:

	Second feet.
Berenda, north	7
Berenda, south	18
Berenda, middle	10
Spring, north	60
Spring, south	50

On the Pecos in Chavez County there are no operated ditches, all the flow being appropriated by the Pecos Irrigation and Improvement Company in Eddy County.

On the Rio Hondo there are eleven canals, but four of these, namely, the Overton, the Edwards, the Barnett, all individual ditches, and the Lincoln County community ditch, are not operated. Of the balance, the Cockrell irrigates 60 acres and the Sol. Jacobs 100 acres, both being individual ditches. The community ditches and the acreage irrigated under them are the Perry Fountain, 250 acres, and the Hondo Falls, 40 acres. Corporate ditches are Long and Truxton, irrigating 180 acres; Lea Cockrell, 80 acres, and the Pecos Irrigation and Improvement Canal, 4,000 acres.

From the Berenda River, north, one ditch is taken out (the Pat Boone), irrigating 70 acres. From the Berenda, middle, three ditches are taken out—the Milne-Busch, irrigating 150 acres; the Cosmo Sedillo, irrigating 30 acres, and the J. Bowman, which is not operated. On the Berenda, south, there are three ditches—the Busch-Milne and the Thompson, both individual ditches and irrigating 160 acres, respectively, and the Last Chance community ditch, serving 220 acres.

The Spring River, north, supplies six ditches; the Griff Cunningham (individual) irrigating 60 acres; the Pioneer (community) irrigating 330 acres; the Stone or Eureka, the Lee-Cunningham, the Pierce, Cunningham and Ballard, and the Cap. Lea (all being corporate ditches), irrigating, respectively, 650, 600, 230, and 60 acres.

Spring River, south, also serves six ditches. The Woodlawn and the Pumpkin Row are corporate, and irrigate 540 and 1,200 acres, respectively. The other four are community ditches; of these the Chisum irrigates 1,060 acres; the Texas, 500 acres; the Miller, 250 acres; while the Harris is not operated. The total acreage irrigated being 10,820 acres.

Irrigation on the Pecos below Roswell is confined to the system of the Pecos Irrigation and Improvement Company. This system is one of the largest in the United States, and consists of a series of three storage reservoirs of a combined capacity of about 110,000 acre-feet, supplying canals on either side of the river. It is stated that there are 200,000 acres of land under the canals served by this system, but only a portion of this acreage (12,500) is in cultivation.

There are six tributaries of the Pecos in this section. Below Roswell the first stream of importance is the Rio Felix, which rises among the southeastern foothills of the White Mountains and after a few miles sinks and does not again appear until within 4 miles of its mouth, a distance of 25 miles, where it appears again in a series of springs.

The Penasco takes its rise in the Sacramento Mountains, and formerly flowed 40 miles as a fair-sized brook, then, entering a strip of marshy land 10 to 12 miles long, it disappears. There was practically no connection between the upper and lower Penasco, the latter commencing in a series of springs about 12 miles from the Pecos. Its flow in the upper portion is permanent in Lincoln County, the surplus sinking in the sands below Hope. In Eddy County springs rising in its bed supply a mean flow of 8 second-feet, while during floods it reaches a maximum of about 12,700 second-feet. The entire normal flow is consumed during irrigation season.

The Seven Rivers rise in small springs in Eddy County. The combined normal flow is about 20 second-feet, but reaches a maximum of 7,500 second-feet during the rainy

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FOUR-YEAR-OLD APPLE TREE, PECOS VALLEY.

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season. There is a surplus of about 5 second-feet from this stream which is lost in seepage.

Rocky Arroyo rises in the Guadalupe Mountains and is permanent in its upper portion, but sinks in the gravel below. Its normal flow is about 10 second-feet, with a flood flow of 1,200 second-feet. Practically all the water is consumed in irrigation, but there is a small surplus which is susceptible of use. In Dark Canyon the same conditions are met, but its normal flow is only about 5 second-feet, while its flood flow reaches 14,000 second-feet. All the water is consumed.

Black River drains a portion of the eastern slope of the Guadalupe Mountains. This river is about 35 miles long, but is a small stream to within 16 miles of the Pecos, where its volume is considerably increased by numerous springs. It flows through a series of lakes and is subject to extensive floods on account of the large area drained. Its normal flow is about 20 second-feet, while in floods it reaches a maximum of 15,000 second-feet. Only about one-half the normal flow is in use on this stream.

The entire absence of tributaries on the eastern side of the Pecos is very striking, and is due, no doubt, to the pervious character of the soil of the Staked Plains, upon which no drainage system is established. The only supply of water which the Pecos receives from this side comes from a few small alkaline springs, or from a small arroyo, which carries water once or twice in a season.

The constant never-failing supply of water in the Pecos comes from springs which must receive their supply from a great distance. This is owing to the peculiar structure of the country, and the prevalence of the easily dissolved limestones, which allow the waters to make underground channels for themselves, and thus flow for considerable distance out of sight.

Reservoir sites are to be found on the Pecos and all these tributaries, and it is probable that 70,000 acres in Eddy County could be irrigated by utilizing these sites even without storage; 20,000 acres more than the present acreage can be irrigated.

In the western portion of the lower Pecos district are located the White, Sacramento, and Guadulupe mountains, in which rise many small streams, those on the eastern slopes flowing toward the Pecos, but nearly all disappearing in the sands a short distance from their source. The same is true of the few streams rising on the western slopes; they disappear and form a part of what is called the Lost River district.

The irrigated lands are found for the most part along the Cienega del Macho, Rio Ruidoso, Rio Bonito, and the upper portions of Rio Jelia Pensaco, Sacramento, and Pinos Creek, heading on the east side of the divide, and Nogal Creek, Three Rivers, Rio Tulerosa and Lost River on its western face. Farmers have settled along the upper portions of these streams and have diverted the water by small ditches, bringing under cultivation a small part of the arable land. Along the head waters of these creeks there appears to be an ample supply of water.

The total irrigated acreage of this section is about 18,500 acres, of which 4,000 acres are located on the Penasco above Hope and 750 below, 500 on the Upper Rio Felix and 250 on the lower Black River.

The acreage irrigated on these two streams can be increased 100 per cent, as only about one-half the flow is utilized.

Only a thorough investigation can determine the possibilities of the other portions of this section. The total acreage irrigated in this district is as follows:

	Acres.
Pecos above Roswell	11,500
Pecos and tributaries in Chavez County	10,820
Pecos and tributaries in Eddy County	13,500
Western section of Pecos district	18,500
Total	54,320

Rio Grande.—District No. 11.

Geographical location: Extends from north to south through the center portion of the Territory. Acreage irrigated, 80,600.

The sources of the Rio Grande are in the Rocky Mountains of Colorado. It receives a large number of tributaries along its upper course and enters the San Luis Valley as a large stream, where it is further augmented by the drainage from the Sangre de Cristo Mountains.

At the lower end of the valley the river has cut its way through the lava dam and now flows through a canyon which is about 100 feet deep at the Colorado line, but deepens to about 700 feet at the mouth of the Rio Hondo, and holds this depth within a short distance above Embudo.

No living water enters this canyon from the west, but several good streams bring water from the east, notably the Costilla, Colorado, Rio Hondo, Taos, and Embudo, all of which rise in the Costilla and Taos Mountains. These streams are perennial, and all of them discharge large quantities of water to the Rio Grande, augmenting its

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flow greatly. The fall of the river is about 30 feet per mile between the Colorado line and Embudo.

There is no arable land along this portion of the river excepting in the vicinity of Rinconada and immediately above Embudo, the acreage irrigated from water diverted from the Rio Grande being about 700 acres.

About 3 miles below Embudo the walls of the canyon fall away abruptly and the rivers enters the Espanola Valley, which extends to White Rock Canyon some 25 miles below. In this valley it receives the waters of the Santa Cruz and Nambe from the east and of the Chama from the west.

The Santa Cruz and Chama, especially the latter, are streams of great importance, and contribute more largely to the flow of the Rio Grande than any other. They are perennial.

Below the Chama the Rio Grande assumes a different character; the fall becomes less, the velocity is diminished, and sediment deposited forming a bottom of sand and silt with shifting banks. The Chama brings down vast quantities of silt also, and from this point south the river is muddy in the extreme.

Irrigation is confined wholly to the bottom lands along the river, practically all these lands being under ditch. The irrigated acreage in the valley between Embudo and White Rock Canyon is 13,200 acres, made up as follows:

	Acres.
From water diverted from the Rio Grande	6,000
From water diverted from the Chama	4,500
From water diverted from the Santa Cruz	1,600
From water diverted from the Nambe	600
From water diverted from the Santa Clara	500
Total	13,200

In this section the water supply of the Rio Grande is always good.

After passing through White Rock Canyon, which is a narrow gorge, some 20 miles long, with precipitous walls some 500 feet high, the river enters the Albuquerque Valley of the Rio Grande, which extends south to San Marcial. This valley is narrow, at no place being more than 3 miles wide, while at many points the side hills approach each other so closely that there are no bottom lands.

Around Bernalillo, Albuquerque, Belen, and from Los Lunas, south, are large areas of cultivated lands. In the vicinity of Bernalillo, Alameda, and especially between Los Lunas and Belen, are large alkali flats, once productive fields, but now worthless from lack of drainage, without which it is doubtful if much further cultivation can be accomplished.

From San Felipe to San Marcial the river occupies a broad, sandy bed, dividing in low stages into a number of narrow, crooked channels, but in flood covering in many places nearly half the valley. The loss from seepage and evaporation in the river from San Felipe south is very great and is responsible for much of the shortage of water felt in the lower river during the irrigation season.

All along the river there is much waste bottom land, a portion of which above Los Lunas raises a scanty supply of coarse grass for grazing purposes. Below Los Lunas a large part of the land is covered with cottonwood thickets. Where these are cut away the land is found to be of excellent quality.

There are no perennial tributaries entering the Rio Grande in this section. The Santa Fe, Gallisteo and Tijeras enter from the east, the first delivering water to the river during the early spring and in time of floods; the last two only in time of floods.

From the west, the river receives the drainage from the Jemez, Puerco, and Salado. The Jemez and Puerco deliver water during the early spring and in flood times; especially the latter, which ha sa flood discharge of about 32,000 second-feet, as measured near Rocky Ford.

The Salado flows only in time of floods.

Not over one-fourth of the bottom lands in the Albuquerque Valley is under ditch and of this only a small portion is in cultivation. The land irrigated in this section between Cochiti and San Marcial is about 22,500 acres.

All the ditches serving this land are individual and community ditches of the most primitive construction. A statement of the land served under each ditch is an impossibility, as lands lying under one ditch may be, and many times are, served from a higher one. However, there are about seventy ditches within the limits of the Albuquerque Valley, and the average acreage served is 320 acres.

The water supply of this valley is ample in the upper part, but has failed below Bernalillo in times of great drought. Failures occur more frequently below Ysleta, and from Acacia south the supply after the middle of July is precarious in times of subnormal rainfall.

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After leaving the Albuquerque Valley, for some miles below San Marcial, the river flows through a comparatively narrow bottom, which is not more than one-fourth of a mile wide and is bordered in places by steep rocky bluffs, these disappearing farther down the river. Ten miles below San Marcial the bottom lands nearly or quite disappear, and on the left side the Fra Cristobal Mountains rise abruptly from the water's edge, while on the right or west side the ground rises gradually from the river's bank to the foothills. The river channel continues of this character to a point below the little Mexican town of San Jose, where, after contracting, the valley opens again to a width of about half a mile and, abruptly contracting again, the river enters a canyon.

This canyon extends for about 6 miles, and varies in width from 500 to 1,500 feet at the high-water mark. The walls of the canyon are of gravel and conglomerate, overlaid by lava, which in some places, particularly on the left bank, reaches a thickness of 40 feet. The walls at the highest part are about 100 feet high, decreasing to 50 or 60 feet in places, and are cut by arroyos.

Below this gorge the river again widens and there are patches of irrigable land; but the river bottom itself is narrow and the river bed, being nearly half a mile in width, occupies nearly all of the narrow valley.

These alternations of narrow gorges and bottom lands continue nearly to Fort Selden. In this course are points at which the river bottom lands are between 5 and 6 miles in width, and are covered for the most part with a dense growth of mesquite and cottonwood.

As in the case of the Albuquerque Valley, but little of the bottom land is in cultivation, the acreage irrigated being about 7,000 acres.

There are two reservoir sites between San Marcial and Rincon. The Rio Grande Dam and Irrigation Company has been organized with the object of improving the site at Elephant Butte and irrigating the lands below. It is proposed to build at this point a dam 96 feet high, impounding 250,000 acre-feet of water, and irrigating not only the Mesilla Valley but also the valleys of Lomo Pardo, Colorado, and Rincon above. It is only through the construction of such systems of storage and by the utilization of the underground waters that the central and southern portion of the Rio Grande Valley in New Mexico may hope to save themselves from the disastrous effects of drought, and bring under cultivation the great acreage of waste land now idle.

Below Fort Selden the valley opens, and continues in general broad and fertile down to the constriction at El Paso. In this course is the Mesilla Valley, one of the best localities for fruit growing along the Rio Grande. This valley, stretching from Fort Selden Reservation on the north to the Texas line on the south, a distance of about 35 miles, and with a width varying from 8 to 10 miles, includes land equal to any in the United States. The soil is of wonderful fertility and great depth, but agriculture has made but slow progress, owing to the uncertainty of the water supply, which may fail after July 1.

The acreage irrigated in the Mesilla Valley within the Territory of New Mexico is about 22,000 acres, and no further increase may be looked for without storage or the utilization of the underground waters.

The question of water supply is attracting more and more attention each year, and has become of vital importance to all below Albuquerque. It has of late been made the subject of diplomatic correspondence between the United States and Mexico.

The only data available in a study of this important subject is that collected by the division of hydrography of the United States Geological Survey, which since 1889 has been studying this subject. Gauging stations have been maintained along the river and frequent measurements made, from which has been calculated the discharge of the river at the several points.

The most northern of these stations is at Del Norte, Colo. I give herewith a table of discharge showing the maximum, minimum, and mean flow, and total for the month, during the years a record may be had.

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Discharge of Rio Grande at Del Norte, Colo.

[Drainage area, 1,400 square miles.]

Month.	Maximum.	Minimum.	Mean.	Total for month.
1889.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
October 11 to 31	345	214	278	17,097
November	364	290	319	18,980
December	364	200	281	17,281
1890.				
January	1,000	326	552	33,948
February	896	745	796	44,178
March	842	404	487	29,950
April	1,380	404	913	54,323
May	5,930	1,990	4,331	266,356
June	5,555	2,550	3,807	226,516
July	2,260	862	1,515	93,172
August	930	450	612	37,638
September	450	326	383	22,788
October	862	307	470	28,905
November	610	345	478	28,441
December	670	475	565	34,747
Per annum	5,930	307	1,242	900,962
1891.				
January	1,320	670	990	60,885
February	1,410	1,196	1,294	71,317
March	1,460	930	1,280	78,720
April	3,160	796	1,410	83,895
May	5,650	1,860	3,245	202,027
June	5,555	2,190	4,146	246,687
July	3,565	862	1,693	104,119
August	1,460	404	663	40,774
September	1,234	290	527	31,356
October	2,475	450	844	51,906
November	450	308	374	22,253
December	.....	a 325	a 325	19,987
Per annum	5,650	290	1,403	1,014,426
1892.				
January	.....	.....	a 300	18,450
February	.....	.....	a 300	17,250
March 22 to 31	345	290	316	19,434
April	2,400	345	1,047	62,296
May	4,710	1,510	2,605	160,207
June	3,160	1,152	2,187	130,126
July	1,074	554	740	45,510
August	610	308	444	27,306
September	308	243	262	15,589
October	290	243	259	15,928
November	829	243	360	21,420
December	1,074	862	922	56,703
Per annum	4,710	243	812	590,219
1893.				
January	1,113	862	966	59,409
February	.....	.....	a 700	38,850
March	.....	.....	a 500	30,750
April	1,037	326	533	31,714
May	3,320	732	1,944	119,556
June	2,850	670	1,749	104,066
July	640	290	395	24,292
August	450	258	324	19,926
September	345	228	270	16,065
October	308	243	263	16,175
November	450	214	278	16,600
December	862	228	642	39,483
Per annum	3,320	214	714	516,886
1894.				
January	1,370	1,080	1,213	75,200
February	1,260	1,120	1,200	67,200
March	1,370	550	1,015	62,930
April	2,010	550	860	51,600
May	4,560	1,310	2,510	155,620

a Estimated.

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Discharge of Rio Grande at Del Norte, Colo.—Continued.

Month.	Maximum.	Minimum.	Mean.	Total for month.
1894—Continued.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
June	1,840	450	960	58,800
July	490	300	355	22,010
August	550	300	380	23,560
September	490	260	345	20,600
October	450	300	345	21,390
November	300	235	270	16,200
December	240	665	360	22,330
Per annum	4,560	235	818	597,440
1895.				
January	894	680	801	49,252
February	1,061	894	953	52,927
March	960	403	638	39,229
April	3,129	650	1,883	112,047
May	3,129	1,382	2,116	130,108
June	3,804	1,172	2,209	131,445
July	1,252	770	958	58,905
August	960	566	720	44,271
September	566	376	454	27,015
October	484	403	435	26,747
November	403	322	353	21,005
December	1,212	403	1,008	61,980
Per annum	3,804	322	1,044	754,931
1896.				
January	1,428	1,172	1,293	79,504
February	2,154	960	1,258	72,361
March	1,336	830	1,081	66,469
April	3,054	594	1,484	88,304
May	3,579	1,212	2,374	145,978
June	1,766	430	821	48,853
July	650	322	403	24,780
August	703	214	261	16,048
September	1,294	268	477	28,383
October	566	403	469	28,838
November	376	268	310	18,446
December	430	322	375	23,058
Per annum	3,579	214	884	641,017
1897.				
January	1,120	465	911	56,480
February	1,275	1,150	1,209	33,852
March	1,375	590	856	53,072
April	1,800	530	1,023	61,380
May	5,250	1,720	3,538	219,356
June	4,870	1,580	3,299	197,940
July	2,140	595	1,094	67,828
August	630	300	457	28,334
September	990	290	635	38,100
October	2,100	810	1,371	85,002
November	890	540	686	41,160
December	1,280	750	1,036	64,232
Per annum	5,250	290	1,343	946,736

Three stations have been maintained in New Mexico; at Embudo, Rio Grande, and San Marcial.

The Embudo station is important, inasmuch as it furnishes the record of the flow of the Rio Grande before the diversion of its waters in New Mexico. I herewith give tables of discharge showing this flow.

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Discharge of Rio Grande at Embudo, N. Mex.

[Drainage area, 7,000 square miles.]

Month.	Maximum.	Minimum.	Mean.	Total for month.
1889.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
January	495	379	431	26,506
February	576	420	473	26,251
March	1,042	537	784	48,216
April	4,420	970	2,261	134,530
May	5,075	2,443	3,430	210,945
June	5,660	1,390	2,922	173,859
July	1,105	236	471	28,966
August	253	181	206	12,669
September	264	184	212	12,614
October	324	243	283	17,404
November	507	253	366	21,777
December	610	364	542	33,333
Per annum	5,660	181	1,032	747,070
1890.				
January	617	260	437	26,875
February	670	344	553	30,691
March	1,044	330	682	41,943
April	3,220	842	2,083	123,938
May	6,071	2,660	4,960	305,040
June	5,740	2,768	4,107	244,366
July	2,640	920	1,593	97,969
August	1,134	636	814	50,061
September	1,044	496	545	32,427
October	606	523	562	34,563
November	699	550	616	36,652
December	660	636	648	39,852
Per annum	6,071	260	1,467	1,064,377
1891.				
January	666	550	586	36,039
February	1,000	550	616	34,182
March	1,450	735	917	56,395
April	5,690	735	2,370	141,015
May	8,550	4,520	5,965	366,847
June	6,340	4,325	5,040	299,880
July	4,130	1,250	2,356	144,894
August	1,805	320	933	57,379
September	2,025	320	469	27,905
October	3,350	225	1,681	103,381
November	970	515	778	46,291
December	880	340	553	34,009
Per annum	8,550	225	1,855	1,348,217
1892.				
January	615	440	497	30,565
February	700	490	596	34,270
March	1,550	700	1,051	64,636
April	4,910	860	2,979	177,250
May	6,665	4,130	4,890	300,735
June	4,715	1,550	3,146	187,187
July	1,400	280	538	33,087
August	300	152	191	11,746
September	165	140	152	9,044
October	260	165	202	12,423
November	400	243	317	18,861
December	490	165	324	19,926
Per annum	6,665	140	1,240	899,730
1893.				
January	360	280	332	20,418
February	465	340	415	23,033
March	670	360	501	30,812
April	2,465	700	1,436	85,442
May	5,105	1,500	3,119	191,819
June	3,740	540	2,533	150,714
July	1,150	130	226	13,899
August	565	140	230	14,145
September	440	225	287	17,077
October	420	340	363	22,325
November	.....	.....	*a* 450	27,000
December	.....	.....	*a* 445	27,590
Per annum	.....	.....	862	624,274

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Discharge of Rio Grande at Embudo, N. Mex.—Continued.

Month.	Maximum.	Minimum.	Mean.	Total for month.
1894.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
January	.....	.....	435	26,970
February	.....	.....	450	25,200
March	.....	.....	a 500	31,000
April	.....	.....	.....	.....
May	.....	.....	.....	.....
June	.....	.....	.....	.....
July	.....	.....	.....	.....
August	.....	.....	.....	.....
September	.....	.....	155	9,300
October	.....	.....	229	14,198
November	.....	.....	340	20,400
December	.....	.....	338	20,956
Per annum	.....	.....	.....	.....
1895.				
January	552	432	475	29,207
February	672	420	503	27,985
March	1,410	640	759	46,546
April	4,290	592	2,541	151,200
May	4,290	1,573	2,679	164,725
June	4,985	790	3,021	179,762
July	2,530	612	1,335	82,086
August	2,016	652	1,080	66,407
September	1,146	480	636	37,845
October	572	460	494	30,375
November	700	540	611	36,357
December	580	420	534	32,834
Per annum	4,985	420	1,222	885,279
1896.				
January	660	460	532	32,712
February	640	480	551	31,694
March	2,100	580	957	58,844
April	2,720	1,200	1,797	106,929
May	2,980	850	1,598	98,259
June	990	210	367	21,838
July	1,380	210	299	18,385
August	310	210	249	15,310
September	580	210	228	13,570
October	1,090	275	349	21,459
November	660	210	395	23,504
December	500	380	414	25,456
Per annum	2,980	210	645	467,960
1897.				
January	410	375	384	23,826
February	475	375	407	22,832
March	865	410	561	34,784
April	3,178	700	1,691	101,434
May	8,745	3,178	5,443	337,450
June	7,600	2,270	4,596	275,788
July	1,925	345	1,248	77,268
August	1,015	285	338	20,970
September	460	285	344	20,660
October	2,150	495	1,535	95,150
November	1,435	745	1,137	68,260
December	745	415	548	33,960
Per annum	8,745	285	1,519	1,112,382

a Estimated.

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The Rio Grande station is located at the upper end of White Rock Canyon, and is the most important in New Mexico. It was established in February, 1895, and shows the great influence on the flow of the Rio Grande of the Chama, the Santa Cruz, Nambe, and other streams entering the river in its passage through the Espanola Valley. Its record is as follows:

Discharge of Rio Grande at Rio Grande, N. Mex.

Month.	Maximum.	Minimum.	Mean.	Total for month.
1895.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
January	.....	.....	.....	a 34,463
February	1,440	355	591	32,822
March	2,640	730	1,371	84,294
April	8,630	1,610	5,073	301,864
May	6,055	2,420	4,616	283,827
June	7,200	1,120	4,630	275,504
July	4,430	1,005	1,768	108,710
August	2,490	705	1,481	91,063
September	1,160	530	723	43,021
October	880	630	707	43,472
November	940	655	834	49,626
December	855	605	713	43,841
Per annum	8,630	355	2,046	1,392,507
1896.				
January	.....	.....	a 600	36,893
February	.....	.....	a 600	34,512
March 4 to 31	3,015	675	1,355	75,264
April	5,140	1,810	3,483	207,253
May	5,250	1,265	2,704	166,263
June	1,680	255	535	31,835
July	920	255	412	25,333
August	310	210	243	14,942
September	735	255	299	17,792
October	617	350	461	28,346
November	617	310	498	29,633
December	645	330	488	30,006
Per annum	5,250	210	973	698,072
1897.				
January	570	300	472	25,280
February	590	470	541	30,320
March	2,485	610	985	61,480
April	9,220	1,200	5,056	303,350
May	15,340	8,500	11,454	710,120
June	10,900	2,480	6,153	369,180
July	3,190	200	1,580	98,180
August	1,255	240	458	28,380
September	2,360	360	650	38,960
October	3,465	780	2,227	138,080
November	1,710	680	1,208	72,480
December	745	350	536	33,230
Per annum	15,340	200	2,610	1,909,060

a Estimated.

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SCENE IN LOWER RIO GRANDE VALLEY.

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The station at San Marcial has been maintained since 1895, but owing to the shifting bottom results have been obtained with difficulty. This station demonstrates the influence of the flood-water flow on the discharge of the Rio Grande, there being no permanent streams entering the river between Rio Grande Station and San Marcial, and the spring flow, where there is any, being very small. In 1895 the record covers only the months from February to August.

Estimated monthly discharge of Rio Grande at San Marcial, N. Mex.

[Drainage area, 28,067 square miles.]

Month.	Maximum.	Minimum.	Mean.	Total for month.
1895.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
February	1,755	280	986	53,760
March	3,115	1,350	2,096	128,879
April	7,800	2,180	4,689	279,014
May	6,265	2,095	3,625	222,892
June	5,958	1,080	3,922	233,375
July	7,339	960	2,431	149,476
August	6,265	1,210	2,913	179,118
	7,800	280	2,952	1,246,509
1896.				
January				a 25,000
February	885	580	680	39,144
March	2,200	240	679	41,750
April	4,800	1,400	3,142	186,962
May	4,800	195	2,019	124,143
June	820	0	164	9,759
July	4,800	0	466	28,653
August	820	0	118	7,255
September	1,500	0	130	7,735
October	11,300	0	742	45,624
November	496	15	209	12,444
December	820	460	619	38,060
Per annum	11,300	0	815	566,499
1897.				
January	600	200	318	19,694
February	600	350	434	24,350
March	1,350	350	660	40,950
April	7,025	900	3,584	315,050
May	22,250	6,150	12,173	754,700
June	11,112	1,775	6,156	369,350
July	2,025	270	1,117	69,250
August	365	5	101	6,230
September	6,050	5	1,907	114,412
October	15,500	650	4,619	286,400
November	3,500	2,100	2,953	177,200
December	3,100	2,400	2,484	154,000
Per annum	22,250	5	3,042	2,331,586

a Estimated.

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At El Paso, Tex., the river has been gauged at varying periods, but unfortunately the record is not continuous. This station is of as much or more importance than any of the others, as the data obtained here will be of the greatest importance in the adjustment of the conflicting water rights claimed by New Mexico, Texas, and the Republic of Mexico.

I present herewith all the data available on this subject.

Discharge of the Rio Grande at El Paso, Tex.

[Drainage area, 30,000 square miles.]

Month.	Maximum.	Minimum.	Mean.	Total for month.
1889.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
May 10 to 31	4,705	2,060	3,116	191,634
June	4,460	660	2,638	156,961
July	930	0	237	14,575
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	0	0	0
December	252	0	71	4,366
1890.				
January	280	126	196	12,054
February	458	108	290	16,095
March	1,140	45	424	26,076
April	4,108	470	2,190	130,305
May	7,200	3,495	5,771	354,916
June	7,200	2,925	4,404	262,038
July	2,355	235	854	52,521
August	2,497	170	734	45,141
September	660	40	176	10,472
October	116	40	65	3,997
November	610	40	284	16,898
December	610	480	535	32,902
Per annum	7,200	40	1,327	963,415
1891.				
January	715	140	451	27,736
February	2,640	470	809	44,899
March	4,635	470	1,866	114,759
April	8,625	1,040	4,265	253,767
May	16,620	8,340	11,852	726,528
June	8,340	5,045	6,714	399,483
July	6,345	610	2,271	139,666
August	1,785	17	662	40,713
September	9,480	0	768	45,695
October	3,535	560	1,488	91,512
November	515	235	341	20,289
December	560	190	344	21,156
Per annum	16,620	0	2,653	1,926,203
1892.				
January	470	155	326	20,049
February	830	290	476	27,370
March	2,070	390	752	46,248
April	7,485	470	3,147	187,246
May	10,050	5,205	7,093	436,219
June	6,484	560	2,943	175,108
July	2,500	0	668	41,082
August	140	0	13	800
September	0	0	0	0
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
Per annum	10,050	0	1,285	934,122
1897.				
January	1,260	90	305	18,753
February	230	125	194	10,774
March	120	30	72	4,427
April	4,225	40	1,740	103,537
May	17,000	5,000	8,312	511,085
June	11,000	2,000	6,095	362,678
July	5,200	300	1,330	81,778

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Discharge of the Rio Grande at El Paso, Tex.—Continued.

Month.	Maximum.	Minimum.	Mean.	Total for month.
1897.	*Second-feet.*	*Second-feet.*	*Second-feet.*	*Acre-feet.*
August	600	0	132	8,117
September	2,880	0	705	41,960
October	5,000	230	1,758	108,095
November	1,695	810	1,132	67,358
December	1,015	460	680	41,812
Per annum	17,000	00	1,871	1,360,374

SUMMARY.

Year.	Del Norte.	Per cent of gain or loss.	Embudo.	Per cent of gain or loss.	Rio Grande.	Per cent of gain or loss.	San Marcial.	Per cent of gain or loss.	El Paso.
1889			747,070						
1890	900,962	+18	1,064,377					—08	963,415
1891	1,014,426	+32	1,348,217					+42	1,926,203
1892	590,219	+52	899,730					+03	984,122
1893	516,886	+20	624,274						
1894	597,440								
1895	754,931	+17	885,279	+57	1,392,507				
1896	641,017	—27	467,960	+47	698,072	—19	566,499		
1897	946,737	+17	1,112,382	+71	1,909,060	+22	2,331,586	—41	1,360,374

The question of the water supply of the Rio Grande is one of the most important subjects in New Mexico to-day, and deserving the most careful attention, but owing to the very limited time allowed me by the commission for the completion of this report, I am unable to digest and discuss the above data. A few ideas, however, have crystalized in the compiling of the data, and I present them herewith. Only a thorough study of the subject can determine whether they are justified or not.

The great draft of water for irrigation purposes from the headwaters of the Rio Grande in Colorado does not apparently lessen the flow in New Mexico as greatly as has been supposed, and is not responsible for the great scarcity of water of late years in the lower Rio Grande Valleys.

The flow of the Rio Grande in New Mexico is dependent upon the precipitation and run-off from the catchment areas of New Mexico rather than from those of Colorado. A period of subnormal precipitation upon the New Mexico watershed may not reach its maximum effect upon the stream flow for a considerable period of time.

The losses from seepage are much greater than generally supposed. I have obtained several measurements of the flow at San Marcial and El Paso during the years 1895, 1896, and 1897, which tend to support this proposition, but they are too fragmentary to base definite conclusions upon.

I submit them herewith:

Date.	Locality.	Discharge in second-feet.	Date.	Locality.	Discharge in second-feet.
1895.			1896.		
Nov. 17	San Marcial	674	Jan. 22	San Marcial	767
20	El Paso	392	25	El Paso	390
	Loss	282		Loss	377
Dec. 24	San Marcial	602	Feb. 14	San Marcial	570
27	El Paso	280	17	El Paso	340
	Loss	322		Loss	230
1896.			1897.		
Jan. 10	San Marcial	701	21	San Marcial	344
13	El Paso	390	24	El Paso	175
	Loss	311		Loss	169

or an average of about 2.8 second-feet per mile.

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In January, 1898, I took measurements of the Rio Grande at Albuquerque and Corrales, the flow being about 1,000 second-feet at the time, and found a loss of 20 second-feet in a distance of 8 miles, or 2.5 second-feet per mile. In all the above measurements there was no diversion whatever of water from the river between the points mentioned.

I have been unable to find any indication of return waters excepting along the headwaters of some of the minor streams.

These seepage losses occur generally throughout New Mexico, and indicate that the higher up the stream the water is diverted the greater the acreage that can be irrigated. New Mexico has great areas of land which will be ultimately irrigated from underground waters. The valleys of the Pecos, Rio Grande, and the Florida plains, as well as other districts, are underlaid with great bodies of water, and this subject should be carefully investigated, as no data is at present available on the subject.

I would suggest that steps be taken toward the creation of the office of Territorial engineer, that these subjects, which are of such vital importance to the Territory at large and so necessary to its advancement, may receive the attention and investigation so greatly needed.

In closing, I wish to acknowledge the great assistance I have received from the many who have so kindly replied to my inquiries, and especially to Mr. W. M. Reed, engineer of the Pecos Irrigation and Improvement Company; Mr. L. S. Preston, engineer of the Maxwell Land Grant Company; to Mr. F. H. Newell, of the United States Geological Survey; and to the reports of the division of hydrography. I have in many instances quoted from the latter freely, and from other papers as well.

Very respectfully,

P. E. HARROUN,
Civil Engineer.

ALBUQUERQUE, N. MEX., *September 29, 1898.*

THE CANADIAN RIVER SECTION.

This agricultural district lies between the Raton Mountains on the north and the Pecos River on the southwest. The Canadian flows through it for about 150 miles in a southeasterly direction to near old Fort Bascom, and from there easterly (a little north of the thirty-fifth parallel of north latitude) for about 50 miles. Most of its tributaries flow in from the west. As the western part of this entire section has a slope toward the east with a general descent to the southward, the highest localities are in the northwest corner and the lowest in the southeast, with a falling altitude of from 5,000 to 3,000 feet. Some portions of this river have a fall of 9 feet per mile. Of its tributaries, the little Cimarron and Vermejo creeks afford considerable breadth of arable land, the former having a valley from 25 to 30 miles long and from 1 to 6 miles wide; and the Vermejo one of the same length and about 2 miles wide. Both of these valleys are very fertile, with plenty of water for irrigation. The Rayado Creekhas a good valley, but it is subject to overflows. Ocate Creek Valley, formed by erosion, is also very good agricultural land. The Mora River Valley is doubtless the finest in this section. It has a length of from 60 to 70 miles and a breadth of about 4½ miles. Its upper portion from 8 to 10 miles in length is about 3 miles wide.

GILA AND COLORADO RIVER SECTION.

This section embraces a belt of land of from 50 to 100 miles wide along the whole of the western line of New Mexico. It is watered by the Rio Puerco of the west and the Zuni River in the north, and by the Gila and its many tributaries and the Rio San Francisco in the south. There are rich and extensive valley lands along the bottoms of these rivers, the most fertile being that of the Rio San Francisco.

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THE NORTHWEST RIVER SECTION.

The San Juan River country in the northwestern portion of the Territory offers a splendid opportunity, not only for the production of cereals, but also for vegetables and fruits of all kinds. The vine thrives to perfection. The valleys of the Las Animas, La Plata, and Los Linos, all tributaries to the San Juan, are also capable of rendering large amounts of produce. The valley of the Chama River, especially in its upper part from Chama on the Denver and Rio Grande Railway to below Tierra Amarilla, the county seat of Rio Arriba, is one of the finest valleys in the country, and highly productive. And again, the valleys of the tributaries to the Chama, the Brazos, Nutritas, Gallinas, Puerco, El Rito, Ojo Caliente, Bear Creek, and others are all highly susceptible to cultivation. The valley of the Puerco of the east, and the Rio Jemez with its many tributaries, afford fertile lands, already for centuries under cultivation.

ADVANTAGES OF IRRIGATION.

When the Eastern farmer sees all the work entailed in laying out a wheat field for irrigation and the subsequent labor of applying the water, he is often heard to exclaim, "If all that work is necessary, I have no use for irrigation." It is useless to attempt to disguise the fact that irrigation entails much expense in the cultivation of crops. Of course, that expense varies with the kind of crop raised; but the question may be asked whether the value of the extra quantity produced is not in excess of the extra expenditure.

Let us take the case of alfalfa. The yearly expense per acre for irrigation, as has already been shown, is $2.15; but four crops of hay are raised in the year in lieu of one without irrigation, or say 3½ tons instead of 1½ tons. The farmer therefore gets an extra 2 tons of hay for an expenditure of $2.15 in water. Add $2 for the cost of harvesting these 2 tons, and you have an extra 2 tons of hay costing $4.15, or $2.08 per ton.

In the case of wheat crop it is not easy to give exact figures, but I have no hesitation in saying that the crop will be double what it is in countries where irrigation is not practiced and where fertilizers are not used. This is due in large part to the fertilizing properties of the river water, to which reference has already been made, which insures the permanent fertility of the soil. One must also bear in mind the fact that wheat and almost all farm products are worth more in the irrigated districts of the West than they are farther east.

No farmer would consider it a waste of money to put 10 tons per acre of barnyard manure upon his land every year, even though it cost him $6. For half this expense he can, where the river water is of the same quality as that which irrigates the Mesilla Valley, not only apply fertilizers equal to the contents of 10 tons of barnyard manure, but he gives the crop the exact amount of water required for a full yield, insures it against loss by drought, and gets a better price than could be obtained elsewhere. Irrigation farming means intensive farming; and it is intensive farms which pay in the long run.

If the question is asked, as it often is, What is the most profitable product to raise in New Mexico? the answer generally made is that apples, peaches, grapes, or some fancy crop will pay the most money, and dazzling figures are given showing the number of pounds per acre and cents per pound, resulting in a rapid fortune from 40 acres of land

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In my opinion, however, the future of farming in New Mexico does not lie in this direction.

I have elsewhere referred to the feeding qualities of alfalfa, especially when mixed with corn or sorghum fodders and corn meal. The climate, soil, and irrigation of the Mesilla Valley, and of many other valleys on the Rio Grande, are especially adapted to raising these crops, and I believe that the future of farming here lies in feeding alfalfa and corn for the production of beef, pork, and dairy products.

There is an abundance of range cattle, which up to the present time are shipped to Eastern points and there fattened for market, while right here are all the means of fattening these cattle. If the cattle were fattened at home, not only could they be shipped more profitably, but there would be a remunerative market at home.

The advantages of stock feeding over fruit growing are many. In the first place, the stock gives an immediate return, whereas no return can be expected from fruit for four and often six years. Then, again, there are more farmers who understand stock raising than there are who understand fruit raising and fruit growing. Moreover, there are many risks attached to an orchard which are absent from a stock farm, especially in the matter of prices obtainable for the produce. Pork, beef, and butter are always in steady demand, and at cash prices, and the stock farmer is not liable to losses from gluts in the market, which so often beset the orchardist.

MINING AND MINERAL RESOURCES.

The mining resources of New Mexico are something wonderful. Here we have practically everything in the shape of mineral too numerous to mention, but running from salt and sulphur up to gold and silver and precious stones. And while there are numerous paying mines, none of them are what may be said to be well developed so far. All that it needs is the influx of more capital to thoroughly develop its various mines, when this Territory will become one of the richest mineral producing regions of the Rocky Mountain range.

The mineral resources of our Territory have been slowly but surely forcing the attention of capitalists, and the outlook for the coming year is very encouraging and brighter than it has ever been. It has been a hard matter to interest men of means in our mines, but gradually this indifference is wearing off and capitalists are now sending experts to examine into the many promising propositions throughout the Territory, and we hope for good results from the interest taken by our Eastern friends, as New Mexico offers as fine opportunities in the mining line as any portion of the globe. This interesting of capitalists means that money for development, for mining machinery, for smelters, mills, and other reduction plants will find its way to New Mexico and make the mining camps of New Mexico large producers.

GOLD OUTPUT WILL BE ENORMOUS FROM MANY DISTRICTS—EASTERN CAPITAL IS BEGINNING TO DISCOVER THE OPPORTUNITY—NOT ONLY GOLD, BUT OTHER METALS AND PRECIOUS STONES ARE FOUND THERE.

Mining matters in New Mexico can only be spoken of as surprising in every respect, and everywhere from along the line of that industry reports are continually coming in of new strikes being made, old mines being worked to their fullest capacity, and new corporations being formed for the purpose of exploration and practical working. It is being demonstrated every day, and in all of the principal districts, that there is gold, and plenty of it. What is needed now is capital with which to work mines that have been proved more than good paying propositions. In many districts the experimental period is positively passed, and practical work with capital is being

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done. Capital is pouring in from the East, and the gold mines of New Mexico are proving vastly more productive of profits than the manufactories of Massachusetts, Ohio, and Illinois, and Eastern men are beginning to realize that such is a fact.

THE MOGOLLON DISTRICT.

Down in the Southern or Mogollon district the activity is very great, and increased capacity is steadily marked. The Confidence is turning out from 80 to 100 tons of ore every day with a force of 70 miners. The ore is of good quality, and the proprietors are enjoying a well deserved period of profits.

The Deadwood mine, in the same district, is now run in connection with the Deep Down mill, which is using daily considerable ore which averages $16 in gold and $21 in silver. There are immense bodies of this ore in sight and very easily gotten out. Numbers of smaller mines in the same district are being worked, and prospectors are actively looking up that region and with considerable success. The Philadelphia men who are interested in that section are reported as pushing the formation of their big company, and it is expected their operations will be commenced in the near future, giving numbers of men in that region employment.

THE HILLSBOROUGH OUTPUT.

And at Hillsborough, in practically the same district, the output from the mines last week amounted to 180 tons. This is a section which could be advantageously prospected. Other regions in the territory have become so well known to mining men that their attention has been diverted to a great extent away from the promising Hillsborough country, although it has been demonstrated there is plenty of gold and other mineral in that region only awaiting development.

In the Ortiz mine grant things are looking lively. The men who have control of the Edison interest there do not say much, but it is generally known that the machinery for the intended gigantic operations on that grant by the Edison Company is being gotten ready in the East as fast as possible, and that before very long a large number of men will be finding employment in producing the yellow stuff from that immense deposit of ore.

THE ORTIZ MINE.

The Ortiz mine is now being run to its full capacity, about 50 tons per day being the average. This mine bids fair to become a wealth producer, and it is significant that but a few months ago the boiler horsepower at that mine was but seven. Within a few months two changes, both for more power, have been instituted, and to-day they are using a 100-horsepower boiler to its full capacity, with the probability in the near future of being compelled to add more as their property reaches a higher state of development.

The Shoshone, in the same country, is another proposition which is very well thought of, and the owners are now engaged in sinking another shaft. At a depth of 20 feet, 4 feet of mineral has been disclosed, and predictions for the future of that property are very bright.

THE COCHITI DISTRICT.

In the Cochiti district and around Bland and Golden things are particularly promising. Bland seems to be a trifle more favored so far as new people and prospectors are concerned, it being reported that new arrivals to that camp have averaged 10 per day for some time back. As few of the new prospectors seem to have any thought of leaving, it must be taken as conclusive evidence that the camp is in a sound, healthy condition. Most of the new arrivals are those directly concerned in mining, and as there is a large unexplored and unclaimed body of land in that vicinity yet, the prospects seem to be alluring for the prospector. Newly opened claims are very easily disposed of, but the owners seem to be inclined to hold on, knowing that time will increase the value of their properties. The Cochiti is undoubtedly the best paying region in the Territory.

NOT A BOOM MOVEMENT.

The unusual developments, both under way and projected, are not the result of a boom. They are but the honest, gigantic stride forward of a surpassingly rich country, whose resources are beginning to be known. The latest big project is the substitution of electricity for steam as the motive power in that district. With a big dam constructed across the Rio Grande about 12 miles above the Albermarle group of mines, and an electric power house at that point large and powerful enough to furnish power to not only the mills but for the tramways and lighting purposes, it is plain to be seen that the Cochitis will be prosperous. This scheme is a bona fide proposition and will be carried out by the manager of the Albermarle, backed by his-

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company. One mining deal was consummated this week whereby a Mr. Weatherhead, of Cleveland, Ohio, gained control of the Gleason mine at Golden. He proposes to immediately install new reduction and smelting works on his claim and the property will no doubt pay out big. It has a 2½-foot vein ranging from $20 to $200 to the ton.

In the Crown Point active work is being done, drifts being run and the contractors report the ore improving at every foot of advance. The Monte Cristo has been enjoying a run of luck, and the owners have ordered 100 tons of machinery for their placer claims. On the Ermine extension development has been recently done, the results proving highly satisfactory, the property showing a 4-foot vein running through. On the Albemarle group everything is humming. The pay roll of this mine already averages $16,000 per month, and that property bids fair to make a national reputation as a producer of gold. While gold commands the most attention, the silver propositions are all right, and should silver ever be restored to its rightful place, prodigious production of that metal in Central New Mexico would be chronicled. Opals are frequently found in this part also. In Santa Fe and more particularly Taos County, deposits of copper are being exploited with good results, and the Copper Glance mine in Taos County has been bonded to Chicago capitalists.

THE RED RIVER COUNTRY.

Up in the Elizabethtown and Red River country everything betokens a very busy summer, and like the other mining districts of the Territory seems to be very sanguine of pronounced and abundant success.

Every able bodied man in that region is able to instantly command work. At the Mallette property very fine free gold specimens have been shown up, with the full expectation that the good prospects will continue. The "I Own" is undergoing considerable development. H. B. Tompkins' property on the Black Mountain, in the same vicinity, is panning out well, his shaft at 35 feet showing up a 4-foot vein of excellent ore. One of the promising claims is that of Henry Young, who has been actively at work taking out ore that assayed $500 per ton. The Anderson property at Elizabethtown is authoritatively reported as sending $100 ore to the mills. In the northern region, and, in fact, in the several mining districts of the Territory, the mining outlook for the coming season is particularly enticing, and there is no doubt but the present success will prove a great benefit as a sound advertising medium for the undoubtedly great and rich mining resources within our borders,

THE MINES OF NEW MEXICO.

[From Territorial Bureau of Immigration.]

GOLD, SILVER, COPPER, LEAD, IRON, COAL, AND ALL THE PRECIOUS AND USEFUL METALS AND MINERALS—FIELDS FOR THE PROSPECTOR AND INVESTOR IN EVERY COUNTY OF THE TERRITORY—A CLIMATE THAT AFFORDS AN OPPORTUNITY FOR THE MINER TO WORK THE YEAR 'ROUND—THE ATTENTION OF MINING MEN FROM THE NORTHERN STATES NOW BEING ATTRACTED TO THIS TERRITORY, RICH IN MINERAL, AND LARGE-SIZED INVESTMENTS ARE BEING MADE.

A vast mineral field.—Mr. J. D. Boue, a mining expert of good standing, who has a practical knowledge of the different mineral districts in the Territory, says:

"As a broad assertion, we may say the whole mountain region in New Mexico is a fair and a reasonably sure prospecting field. It is a very false idea to suppose that a few favored spots, at which development has taken place—merely little pin points on the vast area of known mineralized territory—are all, or one-thousandth part, of the great resources of our mountains.

"We do not hesitate to say that quite a promising field for prospecting would be right in the midst of any one of our oldest camps. This being true in the oldest and livest mining camps of the Territory, surely the vast field of known mineral-bearing area has been but indifferently prospected, if indeed, at all.

"The seeker after hidden wealth has here in New Mexico a wide field, one which it is not at all improbable will exceed in value anything yet discovered. The areas most likely to produce results are where eruptive forces have been most active, and the disturbances and crystallizing of the strata most pronounced.

"In this territory, with its 122,444 square miles, are rich and inviting fields, practically untouched by the pick of the prospector, and offering the miner and capitalist opportunities for rich returns for labor and money expended, such as are very seldom found in any mining section of the great west. As good, if not better, chances are presented within the boundaries of this territory than were found in Leadville or Cripple Creek, Colo.

"*Mining districts.*—This Territory has now some eighty-five mining districts, which are scattered widely, and cover a large section of country, thus showing that the mineral wealth is by no means confined in any one special place, but largely distributed over a great extent of territory.

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"The territory in New Mexico already more or less developed equals 30,000 square miles of mineral-bearing country, and the better developed districts of this vast extent are as rich as any exploited elsewhere in the United States, and its as yet great 'undeveloped areas' offer to the intelligent prospector and energetic man of means opportunities found in no other mining country.

"*The great mineral belt.*—By examining any ordinary map of the Western States it will be seen that all of the most valuable recent developments of mineral in southern Colorado are on a well-defined line following the Rocky Mountain system into and across New Mexico, and that that line extends through the central west and southwest portions of the territory without a break of any considerable extent.

"That conditions along this extent of country, almost 400 miles in length, in many respects resemble the gold and silver bearing formations of Creede, Cripple Creek, Rosita, Silver Cliff, and the great San Juan country of Colorado can not be doubted, and in the coming years it is not unlikely this section of New Mexico may develop many places as productive of wealth as the above-named Colorado districts.

"*New Mexico gold fields.*—Lying just south of the great commonwealth of Colorado, our first counties are San Juan, Rio Arriba, Taos, Colfax, and Union.

"The evidences of gold throughout San Juan are such that this county becomes attractive as a point where extensive hydraulic operations may be conducted with every assurance of success.

"Passing east from this county we come to Rio Arriba, where the mineral deposits, worked to any great extent, generally take the form of placers and vast fields of coal. It would seem to us that in the vicinity of Tierra Amarilla and Good Hope would be a good and most promising prospecting field for the precious metals.

"*Rich placers.*—Near Abiquiu, along the Chama River, are gold placers that cover nearly 20,000 acres, which show a remarkable average yield of gold, and as water seems to be plentiful for most of the year, this vicinity is unexcelled as a point where large and paying mining enterprises may be conducted. Examination of these deposits along the Chama River are now being made by Prof. F. A. Reynolds, acting under directions from an Eastern mining syndicate, and the daily press report this gentleman as saying that gravel tested by him runs from 50 cents to $3 in gold per cubic yard.

"The deep placer deposits of Taos County, along the Rio Grande, are probably the most extensive in the United States, and investigation warrants us in saying that nothing since the discovery of California and Australia is comparable for its measurable resources of gold available by the hydraulic process. Reference to the report of Prof. Benjamin Silliman, of Yale College, to the Commissioner of the General Land Office, published in 1880, will fully convince even those who are sending men and money to explore Alaska's frozen fields that right here in New Mexico—a land of perpetual sunshine—are equally rich and much more desirable gold placer deposits. The altitude of these deep placer deposits is perhaps 7,000 feet; still, because of this locality being sheltered by the encircling mountains, and because of its more southern latitude, placer mining can be carried on quite nine months of each year and at points the entire year. These great placer deposits do not alone constitute Taos County's great undeveloped resources, for her mountains are rich in metals, as is fully shown at numerous points where there are producing gold, silver, and copper mines.

"*Quartz mining.*—The Red River country in Taos County is fast becoming known to mining men throughout the world as a district destined in a very short time to rival any one of our greatest gold producing sections.

"At La Belle, Amizette, and other points development is being rapidly pushed, and it may be said that Taos County has fairly entered upon a bright mining future.

"To the east of this rich county of Taos lies Colfax County, a district which has produced many millions in gold, and which to-day gives brighter promise than at any time in its history. A very large proportion of the rich mineral lands of this county are comprised within the boundaries of the Maxwell Land Grant Comp ny's property. The liberal policy pursued by this company in its dealings with the prospector is worthy of notice. The management of this grant has laid down rules very similar to those governing mineral locations on public domains, and the property is thrown open to the prospector and miner, who can at a nominal cost acquire title and develop mining properties on the grant. The old Baldy district on this grant is a large gold producer, so also is the Ute Creek district, where is located the famous old Aztec mine, with a record of almost a million in gold. The Montezuma mine, on what is commonly known as Montezuma Hill, has produced between $200,000 and $300,000.

There is greater activity in the west Moreno Valley district than ever before, and only 3 miles from the new but promising camp of Hematite are the world-famed Elizabethtown placers, which have produced over $200,000 in gold. Aside from these famous placers it is said that miners, in a crude way, produce large sums in gold from placer ground but little known.

Grand opening for prospectors.—Little mining of the precious metals has been done

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in Union County, but it is not an unlikely field for prospecting for our undeveloped mineral resources.

"Passing from Union County, we next take up Mora and San Miguel counties, two sections of the Territory which seem to have been but indifferently prospected. The mountain range west of the city of Las Vegas lies directly in the gold producing belt, and surface indications are most favorable.

"South from the city of Santa Fe, Santa Fe County, and not far from the town of Cerrillos, in a disconnected range of mountains, with perhaps an average width of 7 miles, is one of the most remarkable mineral regions of New Mexico, and we may say of the world. This range travels north and south and is known as the Ortiz Mountains. The surface indications are unsurpassed, and a number of fine bodies of low-grade, free-milling gold ores are found, among which may be especially mentioned the famous Cunningham Hill and adjoining properties near Dolores. The main western lode, especially in its southern extension, is rich in copper, as found in the workings of the San Pedro Copper Company. This region was known to the early Spanish explorers, who, upon their advent into this country, discovered and worked the rich gravel deposits at the base of Ortiz Mountain, in and about San Pedro, Golden, and Dolores.

"*A million a year.*—An experienced and reliable expert who examined these extensive placers a few years ago reported that, 'if sufficient water were placed thereon, these placers could be made to yield $1,000,000 in gold per year for over twenty-three years.' The 'country rock,' being soft and porous so that the vein matter lying near the surface rapidly oxidizes and the oxidized 'honeycomb' quartz remaining with its vast supply of free gold, is eroded by degrees and being carried down the slope to feed the placers below.

"*The famous turquois mine.*—In the vicinity of Cerrillos is a small section of mountainous country, in which is located one of the world's best known and most productive turquois mines. There are, as near as we can learn, some sixty or seventy turquois claims in New Mexico, some ten or a dozen in active and profitable operation.

"The output of turquois in New Mexico, as taken from official sources, was $150,000 in 1891, $175,000 in 1892, $200,000 in 1893, $250,000 in 1894, $350,000 in 1895, and $475,000 in 1896, but it is openly asserted that the true value of turquois mined since 1890 has been greatly underestimated. As an illustration, one of these mines sold in 1893 for $250,000, and, according to the statements of a former owner, has paid a million and a half a year since that time. One single stone taken out is reported to have been bought for $6,000 in New York.

"*Cochiti and Hell Canyon.*—Leaving Santa Fe County, we next take up Bernalillo, which has an area of 8,000 square miles, of which 5,000 square miles are classed as mineral lands. The well-known Cochiti mining district practically dates from discoveries made in 1893. Progress was retarded by title suits under old grants, but a decision favorable to the miners was recently handed down by the United States Supreme Court, and now development in this wonderful camp goes steadily forward.

"East of the city of Albuquerque some 20 miles is the Hell Canyon district, destined in the near future to attract widespread attention. The large bodies of free-milling ores disclosed in the workings of the mines are probably as extensive for amount and character and work as any in the United States. These large bodies of ores are deserving of investigation, and if operated on proper lines will produce handsome returns for many years to come. Considerable mining machinery is now being placed in the camps and active operations will soon commence.

"In our travels south we have now come to Socorro, a county blessed with abundant natural resources, extending as it does about 170 miles east and west by 100 miles north and south, and containing over 10,000,000 acres, some sections of which have produced millions in mineral wealth. This county, which for many years past has been steadily adding to the mineral wealth of the world, stands to-day upon the threshold of a brighter future than at any time in its history.

"*A carload of bullion a day.*—Just west of Socorro City there are large deposits of lead-silver ores, but only at one point in the county is this class of ores now being mined to any great extent—in the Magdalena Mountains. Water Canyon and Copper Creek districts, west of Socorro City, are very rapidly coming into prominence as gold producers, and with the improvements now being made bid fair to rival the best-known sections of the Territory. At the town of Kelley, some 30 miles west of the city of Socorro, are located the famous Kelley mines, heavy producers of lead-silver ores. Under the able management of Capt. A. B. Fitch the Graphic mines are producing with ease sufficient ore to keep in full operation day and night the 100 ton smelter. A carload of bullion is turned out by this plant every twenty-four hours, th s making lively times not only for the many miners in and about Kelley, but every man in this section reaps a measure of benefit from this industry.

"Away to the west in Socorro County, near where the Territorial boundary line joins Arizona, is located the Cooney district, a section at one time producing high-grade silver ores, but whose mines are now being worked largely for the gold values tained in the ores.

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"The far-famed Black range.—We have now reached the county of Sierra, wherein are located the well-known Mimbres, or Black range of mountains, which in many respects are among the most remarkable in the United States. It has been most truly said that an extent of country from San Augustine plains on the north to Cooks Peak on the south, a distance of over 120 miles, is mineralized in a greater or less degree throughout. Mines located along this mineralized belt of country have long been famed as steady producers of high-class ores of all the useful metals, including gold, silver, copper, lead, and iron. The Black range extends in a northerly and southerly direction, and is about 40 miles in width. The apex or summit of the range forms what is known as the Continental Divide. The topography of the country is such as to make any point easily accessible."

A yet undeveloped field.—A large percentage of the known mineral-bearing area of New Mexico has been but indifferently prospected—very much of it not at all. Consequently there is still here a wide field for the seeker after hidden wealth. It is therefore not impossible, or even improbable, that there are yet here quite as profitable fields, untouched by the pick of the prospector, as any that have been developed. There is good reason to believe that the southerly western portions, nearly all mountainous, bordering Arizona and Old Mexico, abound in all the valuable minerals equally if not beyond the northeasterly portions of the mountain areas, nor that in due time, under the rigorous search of the energetic and intelligent prospector, great values will in the not distant future be developed, and to an extent and value equal, if not beyond, any that have yet been reached.

The capitalist, miner, or prospector who decides to cast his lot here will find the foundations of a broad and enlightened society well established. They will find a generous, progressive, and liberal-minded people, ready to lend a helping hand to every comer. They will find order, society, law, and an enlightened public sentiment ruling the Territory.

Favorable climatic conditions.—Not only the character of these deposits as given by conservative and reliable correspondents, but the accessibility and value as shown by the daily record of output and the vast extent of the field covered, mark this as the most attractive field covered to the miner and mine hunter yet developed on the American continent, if not in the world.

The annual report of the New Mexico section of the United States Weather Bureau for 1897, published in Bulletin No. 1, 1898, contains valuable information in regard to the climatic conditions in New Mexico, especially to prospectors and miners. While it shows, as compared to more northerly latitudes, that the mean temperature of the mining sections of New Mexico was seldom below the freezing point and the weather was very rarely too cold for prospecting or surface-mining work. If so disposed, the miner can put in the entire year prospecting or mining, at his pleasure or convenience.

Mining claims, how located.—The bureau frequently receives inquiries asking for information concerning the manner of locating mineral claims in New Mexico, and if our laws differ from the regulations prescribed by the United States General Land Office.

We can say that, in the main, the United States laws, as found in the Revised Statutes, governing the location of claims, govern also in New Mexico; the laws of New Mexico making one additional requirement relating to the locating of mines, which is set out in section 1 of chapter 25, Laws of 1889, as follows:

"That the locator or locators of any mining claim, located after this act shall take effect, shall, within ninety days from the date of taking possession of the same, sink a discovery shaft upon such claim to a depth of at least 10 feet from the lowest part of the rim of such shaft at the surface exposing mineral in place, or shall drive a tunnel, adit, or open cut upon such claim to at least 10 feet below the surface exposing mineral in place."

The United States laws prescribe that mining claims upon veins or lodes of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits, shall not exceed 1,500 feet in length along the vein or lode; and the claim is limited to 300 feet on each side of the vein or lode. (See sec. 2320, Rev. Stats.)

Tunnels.—Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within 3,000 feet from the face of such tunnel on the line thereof to the same extent as discovered from the surface; and locations on the line of such tunnel, of veins or lodes not appearing on the surface, made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid. Failure to prosecute the work on the tunnel for six months shall be considered an abandonment. (See sec. 2323, Rev. Stats.)

Remarkable activity.—The eyes of mining men being now upon the remarkable activity which has suddenly opened up in the Cochiti district, we quote what Mr. Frank W. Wynkoop says of one of our live camps:

"A movement of great importance to the mining world, and especially to New Mexico, is at present in progress in the Cochiti mining district, which is situated in

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Bernalillo County, some 50 miles north of Albuquerque, the county seat, and some 40 miles west of Santa Fe, the capital of New Mexico. Mining is reviving throughout the district. Mining companies of long and general experience, supported by unlimited capital, have taken hold of many of the larger properties, and have instituted operations of a nature not to be surpassed by those of any mining district in the West. The leading features of these operations consist of the construction of a steel mill of 125 tons daily capacity, at a cost of $250,000, to treat the ores of the Albemarle group of four mines; the resumption of operations at the Bland mill, under improved methods and with excellent success in the saving of the gold and silver values contained in the ores of the Lone Star group of mines, at a cost sufficiently low to afford a handsome profit; the projected new 200-ton mill to treat Crown Point and Pino Canyon custom ores, and the development of many of the mining properties which, up to a few months ago, lay idle for the need of capital to make them paying mines.

"To give an idea of the magnitude operations in this district are attaining we will mention the fact that within the past three months extensive developments have been in progress upon four large properties; five other large groups of claims have been taken under lease and bond by responsible mining companies of long experience for large amounts; the construction of one quartz mill has been completed and the construction of another mill is in progress, while two others are in contemplation of early erection.

"The entire Cochiti mining district embraces a mineral region some 6 miles from east to west by about 18 miles from north to south, and includes three distinct parallel quartz lodes, extending north and south and cropping above the surface, which are of enormous size and possess an even value of $8 to $40 to the ton, selected ore running as high as $1,800 to the ton.

"The indications of the present leave little doubt that the Cochiti mining district will henceforth enjoy an era of great prosperity."

A Klondike at home.—The "Klondike of the Southwest" is the name frequently applied to New Mexico, and judging from the flattering progress she has made in mining since January 1, 1898, before the end of the year the fever for the gold in the "Klondike of the Southwest" will be as high and unabating as it now is for the "Klondike of the Northwest," and, in contrast and comparison, producing gold against gold, railroad facilities against reindeers and dogs, food against famine, comfort and health against hardships, and happiness against misery.

Our vast natural resources.—It is no exaggeration to affirm that in point of natural resources none of the Rocky Mountain States exceed New Mexico. In addition to gold, silver, copper, lead, and zinc, coal (anthracite and bituminous), fire clay, alum, sulphur, salt, gypsum, onyx, and marble are found in large deposits. New Mexico supplies the world with turquois.

SILVER CITY, N. MEX., *August 29, 1898.*

SIR: In compliance with section 3 of an act of Congress approved March 3, 1891, entitled "An act for the protection of the lives of miners in the Territories," I beg leave to submit herewith the sixth annual report of this office, covering the fiscal year ended June 30, 1898.

JOHN W. FLEMING,
United States Mine Inspector for the Territory of New Mexico.

HON. MIGUEL A. OTERO, *Governor, Santa Fe, N. Mex.*

OTERO MINE.

[Alex. Bowie, superintendent; John Steward, pit boss.]

Located about 2½ miles in an easterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Caledonian Coal Company. Kind of coal, lignite; thickness of vein, 4 feet 6 inches; total output, fiscal year, 90,366 tons; estimated value of output, $136,049; depth of slope, 1,300 feet; value of improvements this year, $19,776.42; average number of men employed outside, 25; average number of men employed inside, 150; average number of boys employed, 2; where coal is marketed, Santa Fe Pacific Railroad and California; number of days mine worked, 248.

This mine is situated on a spur about 1 mile in length connecting with the Santa Fe Pacific Railroad near Gallup Station, is operated by a slope 1,300 feet in length, and has a capacity of about 500 tons per day. The product is sold to the Santa Fe Pacific Railroad Company and to towns in California. This mine is ventilated by an air shaft and furnace.

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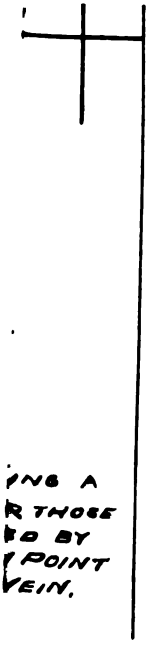

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RECORD OF INSPECTION.

September 18, 1897.—On this date I inspected the mine known as the Otero mine. I measured 4,500 cubic feet of air entering the mine per minute and measured 5,000 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine and found the mine in very good condition.

November 11, 1897.—I again inspected the Otero mine. I measured 10,590 cubic feet of air entering the mine per minute and measured 10,550 cubic feet of air returning through the return air course I found the ventilation good throughout the workings of the mine and found the mine in good condition.

January 11, 1898.—I again inspected the Otero mine. I measured 12,080 cubic feet of air entering the mine per minute and measured 12,405 cubic feet of air returning through the return air course. I found the workings of the mine well ventilated, and found the mine in fair working condition.

March 11, 1898.—I again inspected the Otero mine. I measured 8,050 cubic feet of air entering the mine per minute and measured 8,400 cubic feet of air returning through the return air course. On this tour of inspection I found the miners working too far ahead of the air in Nos. 1 and 2 right butt entries, and ordered crosscuts driven at the face of the entries, so as to force the air to the face of the workings.

GALLUP MINE.

[Hugh McGinn, superintendent; James McQuade, pit boss.]

This mine is located about 3 miles northwest of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 6 feet; total output, fiscal year, 141,145 tons; estimated value of output, $220,000; depth of slope, 3,000 feet; value of improvements this year, not given; average number of men employed outside, 24; average number of men employed inside, 240; average number of boys employed, 5; where coal is marketed, New Mexico, Arizona, and California; number of days mine worked, 235.

RECORD OF INSPECTION.

September 21, 1897.—On this date I inspected the Gallup mine. The fan was running 90 revolutions per minute, and I measured 24,000 cubic feet of air entering the mine per minute and measured 24,075 cubic feet of air returning through the return air course. I took air measurements throughout the workings of the mine and found the air distributed in compliance with the law. On this visit the new air shaft had been sunk to a depth of 120 feet, which is to connect with No. 15 left entry, and when the connection with the shaft and entry is made the ventilation will be very much improved.

November 15, 1897.—I again inspected the Gallup mine. The fan was running 90 revolutions per minute, and I measured 30,000 cubic feet of air entering the mine per minute and measured 30,300 cubic feet of air returning through the return air course. I found the air distributed throughout the workings of the mine in compliance with the law. Found the workings well timbered and in good condition.

January 15, 1898.—On this date I inspected the machinery of the Gallup mine. I found the fan required some repairs and ordered the superintendent to have the necessary repairs made on the fan as soon as possible. I also inspected the new air shaft and found it to be 232 feet deep, but the connection had not been made with No. 15 left entry, and I ordered the superintendent to push the work as fast as possible.

SUNSHINE MINE.

[Hugh McGinn, superintendent.]

Located about 1½ miles north of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 5 feet; total output, fiscal year, 48,450 tons; estimated value of output, $80,000; depth of slope, 2,000 feet; value of improvements this year, none given; average number of men employed outside, 12; average number of men employed inside, 110; average number of boys employed, 3; where coal is marketed, New Mexico, Arizona, and California; number of days mine worked, 231.

This mine is located on a spur 1½ miles in length connected with the Santa Fe Pacific Railroad; operated by a slope; capacity, about 500 tons per day; ventilated by a 12-foot Crawford & McCrimmon fan.

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RECORD OF INSPECTION.

September 16, 1897.—On this date I inspected the Sunshine mine. The fan was running 65 revolutions per minute, and I measured 27,840 cubic feet of air entering the mine per minute, and measured 25,200 cubic feet of air per minute returning through the return air course, thus making a difference of 2,640 cubic feet of air between the intake and outcast. This is caused by some of the air escaping into the old workings of the Black Diamond mine, which is abandoned. I found the ventilation good throughout the workings of the mine. Found places in the roof of the slope which required timbering and ordered said places timbered. The pit boss informed me that new timbers would be put in that night. Otherwise I found the mine in good condition.

November 15, 1897.—On this date I inspected the Sunshine mine. The fan was running 90 revolutions per minute, and I measured 26,460 cubic feet of air entering the mine per minute, and measured 26,250 cubic feet of air returning through the return air course. I found the mine well ventilated and found the workings of the mine in good condition.

January 12, 1898.—I again inspected the Sunshine mine. I measured 28,600 cubic feet of air entering the mine per minute, and measured 28,800 cubic feet of air returning through the return air course. I found the mine well ventilated. Found No. 3 entry in bad condition, and ordered the pit boss to have the entry timbered at once. The pit boss ordered the timbers brought into the mine, and instructed the timbermen to timber the entry that night.

March 9, 1898.—On this date I again inspected the Sunshine mine. The fan was running 75 revolutions per minute, and I measured 40,000 cubic feet of air entering the mine per minute, and measured 41,000 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine, and found the mine in very good condition.

CROWN POINT MINE.

[Hugh McGinn, superintendent; Archie Black, pit boss.]

This mine is located about 3 miles in a northerly direction from the town of Gallup, Bernalillo County, N. Mex Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 3 feet 6 inches; total output, fiscal year, 61,194 tons; estimated value of output, $92,000; depth of shaft, 225 feet; value of improvements this year, not given; average number of men employed outside, 12; average number of men employed inside, 140; average number of boys employed, 4; where coal is marketed, New Mexico, Arizona, and California; number of days mine worked, 231.

This mine is located on a spur 3 miles in length connecting with the Santa Fe Pacific Railroad near Gallup Station; is operated by a shaft 225 feet deep; capacity, about 250 tons per day; ventilated by a 12-foot Crawford & McCrimmon fan and an air shaft.

RECORD OF INSPECTION.

September 17, 1897.—On this date I inspected the Crown Point mine. The fan was running 60 revolutions per minute, and I measured 16,660 cubic feet of air entering the mine per minute, and measured 16,800 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine. I found the mine in good condition.

November 12, 1897.—I again inspected the Crown Point mine. The fan was running 85 revolutions per minute, and I measured 17,920 cubic feet of air entering the mine per minute, and measured 18,000 cubic feet of air returning through the return air course. I found the roof of No. 1 straight entry in bad condition, and ordered the pit boss to have the loose rock taken down and the entry timbered with good, substantial timber.

January 13, 1898.—I again inspected the Crown Point mine. The fan was running 70 revolutions per minute, and I measured 19,950 cubic feet of air entering the mine per minute, and measured 21,840 cubic feet of air returning through the return air course. I found the air distributed in compliance with the law. Found several places along No. 1 straight entry which required timbering and ordered the pit boss to have said places timbered as soon as possible, and the pit boss informed me that the work would be commenced at once. The timbermen were ordered to proceed with the work.

March 12, 1898.—I again inspected the Crown Point mine. The fan was running 85 revolutions per minute, and I measured 19,950 cubic feet of air entering the mine per minute, and measured 20,540 cubic feet of air returning through the return air

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course. I found the mine well ventilated and found the working places well timbered. I found that the escape shaft did not have stations or landing places in the shaft, and I ordered the general manager, W. Weaver, to have stations erected in the shaft, at a distance of 30 feet apart, from the top to the bottom, and have the stations put in as soon as possible. The general manager informed me that he would comply with my request.

CATALPA MINE.

[Hugh McGinn, superintendent.]

Located about 3 miles in a southeasterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 6 feet; total output for fiscal year, 4,556 tons; estimated value of output, $8,000; depth of slope, 1,000 feet; value of improvements this year, not given; average number of men employed outside, 8; average number of men employed inside, 60; where coal is marketed, New Mexico, Arizona, and California; number of days mine worked, 46.

This mine is situated on a spur 3 miles in length connecting with the Santa Fe Pacific main line near Gallup Station. Capacity is about 300 tons per day, and is ventilated by an air shaft. This has not been worked to any extent. All that has been done was in the way of development and of getting the property in readiness for use at any time when there was demand for the product.

RECORD OF INSPECTION.

September 14, 1897.—On this date I inspected the Catalpa mine. At the time of my inspection there were only two miners employed in the mine.

November 18, 1897.—I again inspected the Catalpa mine and found only two miners employed in the mine. Workings in good condition.

ROCKY CLIFF MINE.

[Stephen Canavan, general manager; William Steward, pit boss.]

This mine is located about 2 miles in an easterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by Stephen Canavan. Kind of coal, lignite; thickness of vein, 4 feet 6 inches; output for fiscal year, 22,000 tons; estimated value of output, $33,000; depth of slope, 900 feet; value of improvements this year, $4,300; average number of men employed outside, 3; average number of men employed inside, 32; where coal is marketed, Arizona and California; number of days mine worked, 250.

This mine is located on a spur about 2 miles in length connecting with the Santa Fe Pacific Railroad near Gallup Station. It is ventilated by a furnace. Capacity, 150 tons.

RECORD OF INSPECTION.

September 15, 1897.—On this date I inspected the Rocky Cliff mine. Measured 6,300 cubic feet of air entering the mine per minute, and measured 6,475 cubic feet of air per minute returning through the return air course. I found the mine to be well ventilated and found the workings in good condition.

November 16, 1897.—I again inspected the Rocky Cliff mine. I measured 2,730 cubic feet of air entering the mine per minute, and measured 3,040 cubic feet of air returning through the return air course. I found men working too far ahead of the air on the first left entry, also on first right entry, and ordered the pit boss to have cross cuts driven at the face of the entries. I also found the straight entry, or hauling road, in bad condition and ordered it timbered. The pit boss informed me the work of timbering the entry would be commenced at once.

January 10, 1898.—I again inspected the Rocky Cliff mine. I measured 6,500 cubic feet of air entering the mine per minute, and measured 6,550 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine and found the mine in good condition.

March 9, 1898.—I again inspected the Rocky Cliff mine, and measured 5,510 cubic feet of air entering the mine per minute, and measured 6,450 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine, but found the main hauling roads to be very dusty, and ordered Mr. Canavan, the general manager, to have the roads cleaned and haul the dust out of the mine. Before I took my departure from Gallup the work of cleaning the dust out of the mine was performed.

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W. A. CLARK COAL MINE.

[W. L. Bretherton, agent.]

This mine is located about 5 miles west of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by W. A. Clark. This is a new mine, development having been commenced December 30, 1897. Kind of coal, lignite; thickness of vein, 7 feet; total output since December 30, 1897, to June 30, 1898, 3,500 tons; estimated value of output, $4,000; length of drift, 600 feet; value of improvements, not given; average number of men employed outside, 30; average number of men employed inside, 50; where coal is marketed, Jerome, Ariz.; number of days mine worked, producing coal, 30.

RECORD OF INSPECTION.

January 17, 1898.—On this date I inspected the W. A. Clark mine. At the time of my visit to the mine, 4 miners were employed therein. On this date the development work on this mine consisted of one entry driven 140 feet on a vein of coal; one entry 75 feet, and a shaft sunk to a depth of 40 feet. The vein of coal is 7 feet thick, and is a good quality of lignite coal. The mine has every indication of being a large producer in the near future.

MULHOLLAND & CASNA MINE.

[Gus Mulholland, general manager.]

This mine is located 2½ miles west of the town of Gallup, Bernalillo County, N. Mex., and is being operated by Gus Mulholland and Andrea Casna. The coal is hauled in wagons to Gallup Station and shipped to southern California. This is a new mine, development work having been commenced in the month of July, 1897. Kind of coal mined, lignite; thickness of vein, 4 feet; total output, fiscal year, 200 tons; estimated value of output, $400; depth of slope, 500 feet; total value of improvements, $4,000; average number of men employed, outside, 2; average number of men employed, inside, 4; where coal is marketed, southern California; number of days mine worked, 90.

RECORD OF INSPECTION.

September 22, 1897.—On this date I visited the Mulholland & Casna mine. This mine has a shaft 70 feet deep, at the bottom of which a vein of coal 4 feet in thickness was developed. Also a slope has been driven a distance of 230 feet for the purpose of making connection with the shaft, which will be used as an air shaft. At the time of my visit the connection had not been made. Seven men were employed at the mine.

November 17, 1897.—I again inspected the Mulholland & Casna mine. I found the slope which was being driven to connect with the shaft had been completed and the vein of coal had been encountered, showing the vein of coal to be 4 feet in thickness. Eight miners were employed in the mine. Found the workings of the mine in very good condition.

January 14, 1898.—I again inspected the Mulholland & Casna mine. I measured 4,600 cubic feet of air entering the mine per minute, and found the ventilation good throughout the workings of the mine. Since my previous visit to this mine three rooms had been turned off from the main entry. I found the roof of No. 2 room in a dangerous condition, and ordered Mr. Mulholland to have props put in at once, so as to make the roof of the room secure from all danger. The props were brought into the mine and the work commenced at once. On this visit only four men were employed in the mine. This mine is not being operated at present.

BEACON HILL MINE.

[Theodore A. Fabro, general manager.]

This mine is located about 1½ miles south of the town of Gallup, Bernalillo County, N. Mex. The coal is hauled in wagons and sold for domestic use in Gallup, N. Mex. Kind of coal, lignite; thickness of vein, 6 feet; total output, fiscal year, 600 tons; estimated value of output, $1,080; depth of slope, 900 feet; value of improvements this year, $420; average number of men employed outside, 1; average number of men employed inside, 2; number of days mine worked, 110.

RECORD OF INSPECTION.

September 23, 1897.—On this date I inspected the Beacon Hill mine. I inspected the workings and found them in good condition. The mine was not being operated on this date.

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January 19, 1898.—I again inspected the Beacon Hill mine. At the time of my visit to the mine only four miners were employed therein, and I found the workings of the mine in good condition. On account of the few men employed in this mine I did not deem it necessary to make further inspections of the same.

CANAVAN & BAILEY MINE.

[Thomas Cross, general manager.]

Located about three-fourths of a mile in a northwesterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Summit Coal Company. Kind of coal, lignite; thickness of vein, 5 feet; total output, fiscal year, 800 tons; estimated value of output, $1,200; average number of employes inside, 6; average number of employes outside, 2; length of slope, 650 feet; number of days mine worked, 65.

The product of this mine is hauled to Gallup Station, N. Mex., and shipped to California. Some of the coal is also sold to the local market at Gallup, N. Mex.

RECORD OF INSPECTION.

September 20, 1897.—On this date I inspected the Canavan & Bailey mine. I found the main air course in bad condition, having been partially filled with falls of rock from the roof of the air course. I ordered the general manager to have the air course cleared of the falls of rock. I was informed by the general manager that the work of clearing the air course would be commenced at once.

November 10, 1897.—I again inspected the Canavan & Bailey mine. On this visit to the mine I found the mine in fair working condition. There were only three miners employed in the mine.

January 7, 1898.—I again inspected the Canavan & Bailey mine. On this date the mine was not being operated, but I found the workings of the mine in good condition. I also inspected the machinery and found the hoisting machinery, boilers, and ropes in good condition.

BLOSSBURG MINE.

[J. A. Wiggs, superintendent; James Walsh, pit boss.]

Located near Gardiner, about 4½ miles in a westerly direction from the town of Raton, Colfax County, N. Mex. This mine is owned and operated by the Raton Coal and Coke Company. Kind of coal, bituminous; thickness of vein varies from 6 to 8 feet; total output, fiscal year, 210,000 tons; estimated value of output, this year, $357,500; average number of men employed in and out side, 350; average number of boys employed, 10; length of drift, 9,000 feet; mine in operation, 240 days.

This mine is located on a branch of the Atchison, Topeka and Santa Fe Railroad, connecting with the main line at Dillon Station. This is the largest mine in the Territory, having a capacity of 1,500 tons per day. It is operated upon the double-entry system. The product is sold to the Atchison, Topeka and Santa Fe and the Mexican Central railroads.

RECORD OF INSPECTION.

October 7, 1897.—On this date I inspected the hoisting machinery of the Blossburg mine; also the boilers, ropes, cars, chains, etc., and found the machinery in good condition.

October 8, 1897.—I inspected the underground workings on the left side of the main entry in the Blossburg mine, and found the workings to be in good condition.

October 9, 1897.—I again inspected the Blossburg mine. I measured 8,400 cubic feet of air entering the mine per minute, and found the air distributed throughout the workings as follows, viz:

	Cubic feet air.
Face of main entry	1,680
Last crosscut between seventh and eighth right entries	8,000
Last crosscut between ninth and tenth right entries	8,000

I found a large fall of rock on No. 10, right entry, and ordered the pit boss to have the entry cleared of the fall of rock. The mine was not being operated on this date.

December 8, 1897.—I visited the Blossburg mine for the purpose of inspecting room No. 20, which is located on the right cross entry, in which room a fatal accident had occurred, causing the death of William Sartoris. (See report of fatal accidents.)

December 9, 1897.—I inspected the underground workings of the Blossburg mine. I measured 18,840 cubic feet of air entering the mine per minute, and measured 19,040 cubic feet of air per minute returning through the return air course. I found the mine to be well ventilated, but found some of the timbers broken in Nos. 9 and

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10, right entries, and ordered them replaced with new ones; otherwise I found the mine in good condition.

February 9, 1898.—I again inspected the Blossburg mine. I found the roof of main entry in a dangerous condition, and ordered the entry timbered in all places where the roof was not safe. The pit boss ordered the timbering of the entry commenced at once.

February 10, 1898.—I again inspected the Blossburg mine. I measured 8,160 cubic feet of air entering the mine per minute, and measured 6,545 cubic feet of air traveling in No. 18 left entry. I found the roof of Nos. 12, 13, and 14 rooms on No. 18 left entry in a dangerous condition, and had props put in to secure the roofs of said mentioned places.

February 11, 1898.—On this date a new 25-foot Monongahela Guible fan was started on the Blossburg mine, which is run by a 50-horsepower electric motor. The fan was running 60 revolutions per minute and I took air measurements throughout the workings of the mine. I measured 37,500 cubic feet of air entering the mine per minute, making a difference of 29,340 cubic feet of air in favor of the new fan. I then took air measurements throughout the workings and found the measurements to be as follows, viz:

	Cubic feet air.
Last crosscut between Nos. 3 and 4, left entries	5,280
Face of diagonal entry	27,360
Last crosscut between Nos. 13 and 14, right entries	9,350
Last crosscut between Nos. 11 and 12, right entries	11,230
No. 11, right entry	12,600
Face of pillars of Nos. 9 and 10, right entries	8,550
Return to fan	39,000

I found the new fan had very much improved the ventilation throughout the workings of the mine. On this visit to the mine I found that the company had erected water tanks inside the mine at a point about the center of the workings; and the company were laying a pipe line from the outside of the mine to the tanks. When the pipe line is completed the water will be pumped into the tanks for the purpose of sprinkling the inside workings, also to be used in case of a fire occurring in the mine.

February 12, 1898.—I again visited the Blossburg mine for the purpose of ascertaining if the new fan was working satisfactorily. I found that the fan was running in perfect order and giving perfect satisfaction, but I ordered the superintendent to keep the old fan in place for at least two weeks, or until such time as he was satisfied with the workings of the new machinery being a perfect success.

March 24, 1898.—I again inspected the Blossburg mine. I found the roof of No. 1 right entry in a bad condition and ordered the pit boss to have the entry timbered at once. The timbers were brought into the mine and men were ordered to timber the roof near the face of the workings before mining any more coal.

March 25, 1898.—I again inspected the Blossburg mine. The fan was running 60 revolutions per minute, and I measured 34,560 cubic feet of air entering the mine per minute, and measured 36,015 cubic feet returning per minute. I found the roof of Nos. 3, 4, 5, 6, 7, and 8 rooms on No. 18 left entry in a bad and dangerous condition, and ordered the rooms timbered at once. I also found the main hauling roads to be very dusty and ordered the roads sprinkled with water.

March 26, 1898.—On this date I returned to the Blossburg mine for the purpose of ascertaining if my orders of the 25th had been complied with. I found that the work of timbering the rooms had been completed, but the hauling roads had not been sprinkled. The pit boss assured me that the hauling roads would be sprinkled on the next day (Sunday) while the mine was not in operation.

March 28, 1898.—On this date I was informed that the main pipe line of Blossburg mine, which supplies the boilers with water, had burst, and knowing that as the water got low in the boilers the fan would necessarily have to stop on account of having no steam to run the machinery, I therefore proceeded to the mine at once and ordered the pit boss to notify all the miners and others who were in the mine to get out of the mine as soon as possible. The pit boss notified the miners and had them all to come out. I then notified the pit boss not to allow any of the miners to enter the mine till the fan had been running three hours and the workings thoroughly examined by the fire bosses.

April 20, 1898.—I again inspected the Blossburg mine. I found the miners working too far in advance of the air, and ordered a crosscut driven at the face of No. 1 right entry and make connection with the air course. The pit boss instructed the miners to commence driving the crosscut at once.

April 21, 1898.—I again inspected the Blossburg mine. I measured 33,600 cubic feet of air entering the mine per minute. I then inspected Nos. 1, 2, 3, and 4 left entries. I found the ventilation good throughout the workings. While inspecting the workings above mentioned, I found a place in the back entry off from the main entry about the center of the mine where a keg of black powder had been

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scattered promiscuously for a distance of 75 feet. I came to the conclusion that some person maliciously inclined must have scattered the powder with the full intent of blowing up the mine and killing every person therein, for had some innocent miner ignited the powder with his lamp a dust explosion would undoubtedly have followed, which would have caused the loss of every life in the mine. As soon as I discovered the powder I immediately had water hauled to the place, had it flooded, and had the entry cleaned of all powder and dust, and had it hauled out of the mine. The superintendent was informed of the condition so found, the great danger, etc. He immediately employed two guards whose duty it is to keep a constant watch on all the men employed in the mine, and to allow no person to enter the mine who is not employed therein, also to use every effort to ascertain the parties who were guilty of scattering the powder in the entry.

April 22, 1898.—I again inspected the Blossburg mine and took air measurements, and found the mine well ventilated.

June 24, 1898.—I again inspected the Blossburg mine. I found the miners working too far in advance of the air in No. 1 right entry, and ordered the pit boss to have a crosscut driven between No. 1 right entry and the back air course; also, ordered the face of the entry timbered.

June 25, 1898.—I again inspected the Blossburg mine. Inspected Nos. 1, 2, 3, 4, 5, and 6 left entries; also the rooms on the above-mentioned entries. The fan was running 60 revolutions per minute. I measured 26,400 cubic feet of air entering the mine per minute, and found the ventilation very good throughout the workings which I inspected. I found the workings of the mine in good condition.

June 27, 1898.—On this date I continued my inspection of the Blossburg mine. I inspected Nos. 5, 6, 7, 8, 9, and 10 right entries and the main entry. I took air measurements throughout the workings above mentioned and found the workings well ventilated. Also found the workings in good condition.

The above report on the Blossburg mine includes No. 4 and No. 6 mines, which are on the same vein and operated by the same company.

DESCRIPTION OF THE PROPERTY OF THE RATON COAL AND COKE COMPANY, INCLUDING THE NEW ELECTRIC PLANT.

Lands.—There are 10,000 acres of coal land embraced in the property of the company, in which there are several seams of coal. At present, however, only one seam is being worked by two mines, Nos. 4 and 6, both of which are drift mines located close to each other, the coal averaging from 6 to 7 feet in thickness. The mines are dry and comparatively free from gas. The coal is an excellent quality of bituminous coal, and is used quite largely in New Mexico and Arizona for steam purposes and also in the manufacture of coke.

Coke ovens.—There are at present 76 beehive coke ovens of standard size, 13 feet in diameter. There is a peculiar feature in connection with the ovens, which is quite an innovation in the West, and that is the use of a hot-air flue located between the ovens which are double row batteries, and which flue enables us to economize and utilize the waste heat for generating steam. The waste heat is conducted by means of this flue and smokestacks on the boiler to the boiler plant midway between the two batteries of ovens, and generates a large proportion of the steam power required for the operation of our electric plant. This system of utilizing the waste heat is quite largely used in the South, especially in Alabama, but only one other plant of the beehive pattern with hot-air flue being in use in the United States outside of those in Alabama and New Mexico, this being in Pennsylvania.

Power.—The mines are equipped with three generators, aggregating 500 horsepower, using a 500-volt current. The plant is of the latest improved type, modern in every respect.

Mining.—Mining is done by a plant of 8 Morgan-Gardiner electric mining machines undercutting the coal 7 feet in depth and 44 inches wide, 4 inches high; time required is about four and one-half minutes. Hauling from the partings in the mine is done by 3 electric locomotives, which are in very successful operation, economizing cost of production and facilitating a ready increase of output at all times.

Washing plant.—Washing plant consists of two 400 tons capacity each Robinson-Wiggs coal washers, with all of the latest improved appliances for washing and handling 800 tons of coal per day. At present only one washer is used, the other being held in reserve for future increase in coke ovens. The trolley line for the hauling system is of No. 2/o hard-drawn copper. There is now about 9,000 feet of trolley line in use, 3,000 feet of which runs from the mouth of the mine to the tipple. All partings along the hauling system inside of the mine are furnished with electric lights. The line material was all furnished by the Ohio Brass Company, of Mansfield, Ohio. All the machinery, large and small, is driven by electric motors.

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Tipple.—The tipple is of the latest improved construction, using automatic dumping apparatus and other minor appliances, and enables the company to handle the output, if required, of 2,000 tons per day.

Ventilation.—The mines are ventilated at present by one 25-foot diameter Guibal mine fan, and the mine also has a 22-foot Guibal fan, driven by electric motor, which we have in process of erection as a reserve, so that the mine will at all times be provided with ample ventilating capacity.

Machine shop.—A large machine shop, with modern tools, has been erected for the purpose of manufacturing and repairing all the machinery on the property.

Houses.—The company has 131 dwelling houses, all new, and erected during the past year.

Store.—A large brick store, one and one-half stories, 75 by 120 feet, which is well supplied with merchandise, has also been erected during the past year.

Accidents.—The most modern system of mining is used throughout the mines, and great care is taken to prevent accidents, which are remarkably few in comparison to output and number of men employed, especial attention being given to avoiding accidents to employes.

Summary.—The property now being operated is thoroughly modern and up to date—the most complete plant of its kind in the West. All labor-saving appliances and devices have been introduced, which are now in successful operation at the plant, that are now known in the mining trade.

SMITH MINE, NO. 2.

[Henry Smith, lessee and general manager.]

This mine is located 1 mile north of the town of Raton, Colfax County, N. Mex. Owned by the Maxwell Land Grant Company and is operated under lease by Henry Smith. Kind of coal, bituminous; thickness of vein, 4 feet; total output, fiscal year, 2,972 tons; estimated value of output this year, $5,201; length of drift, 300 feet; value of improvements this year, $150; average number of men employed inside, 6; average number of boys employed inside, 2; where coal is marketed, town of Raton, N. Mex.; number of days mine worked, 240.

The product of this mine is hauled to the town of Raton, N. Mex., and retailed to the domestic trade. Capacity is about 10 tons per day. This mine is now ventilated by a furnace.

RECORD OF INSPECTION.

October 6, 1897.—On this date I inspected the Smith mine No. 2. I measured 2,160 cubic feet of air entering the mine per minute, and measured 2,340 cubic feet of air returning. I found the workings of the mine in good condition, and found the ventilation good throughout the workings of the mine.

December 11, 1897.—I again inspected the Smith mine No. 2. I found the workings of the mine in fair condition. At the time of my visit there were only 4 miners employed in the mine.

February 8, 1898.—On this date I again inspected the Smith mine No. 2. I measured 1,960 cubic feet of air entering the mine per minute. I found that the miners were working too far in advance of the air in Nos. 1, 2, and 3 rooms, and ordered crosscuts driven at the face of the rooms so as to force the air up to the face of the workings. The work of driving the crosscuts was commenced, and when completed the ventilation will be good throughout the workings.

March 23, 1898.—I again inspected the Smith mine No. 2. I measured 1,800 cubic feet of air entering the mine per minute, and measured 1,950 cubic feet of air returning. I found the ventilation good throughout the workings of the mine. I found the mine in good condition.

April 19, 1898.—I again inspected the Smith mine No. 2. I measured 2,100 cubic feet of air entering the mine per minute, and measured 2,275 cubic feet of air returning. I found the workings of the mine in good condition.

June 23, 1898.—On this date I again inspected the Smith mine No. 2. I measured 2,400 cubic feet of air entering the mine per minute, and measured 2,560 cubic feet of air returning through the return air course. On this visit I found the mine well ventilated and the workings in good condition.

MESA MINE.

[Thomas Griffiths, general manager.]

This mine is located about 7 miles east of Raton, Colfax County, N. Mex. Operated by Thomas Griffiths. Kind of coal, bituminous; thickness of vein, 5 feet; total output, fiscal year, 1,000 tons; estimated value of output, $1,750; average number of employes inside, 3; average number of employes outside, 2; length of

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drift, 200 feet; total value of improvements this year, $1,000; mine in operation, 200 days.

The product of this mine is hauled to Raton, N. Mex., and retailed to the domestic trade. Capacity, about 10 tons per day. Ventilation, natural.

RECORD OF INSPECTION.

October 11, 1897.—On this date I inspected the Mesa mine. I measured 1,750 cubic feet of air entering the mine per minute. I measured 1,800 cubic feet of air returning. I found the air distributed in compliance with the law. On this date only 2 miners were employed in the mine.

February 14, 1898.—I again inspected the mine known as the Mesa mine. I inspected the underground workings of the mine and found the same in good condition. At the time of my visit to the mine only 4 miners were employed therein.

March 29, 1898.—I again inspected the Mesa mine. At the time of my visit there were only 3 miners employed in the mine. I found the workings of the mine in fair condition.

June 28, 1898.—I again inspected the Mesa mine. I measured 1,400 cubic feet of air entering the mine per minute, and measured 1,575 cubic feet of air returning through the return air course. I found the ventilation good throughout the workings of the mine and found the mine in good condition.

MONERO MINE.

[J. H. Crist, owner and general manager.]

This mine is located at Monero, Rio Arriba County, N. Mex., on the Denver and Rio Grande Railroad. Kind of coal, bituminous; thickness of veins, three in number, 3 feet 10 inches, 3 feet 8 inches, 3 feet 6 inches; total output fiscal year, 22,500 tons; estimated value of output, $31,000; depth of slopes, mine No. 1, 1,700 feet; mine No. 2, 556 feet; mine No. 3, 500 feet; value of improvements this year, $4,000; average number of men employed outside, 13; average number of men employed inside, 32; where coal is marketed, northern New Mexico and Colorado; number of days mines worked, 313.

The Rio Arriba Coal Company now owns and operates the three mines at Monero, and are designated as No. 1, No. 2, and No. 3 mine. Formerly No. 2 mine was owned by A. H. Willis, and No. 3 mine was owned by M. F. Simers.

RECORD OF INSPECTION.

October 27, 1897.—On this date I inspected the mine known as Monero mine. I measured 13,440 cubic feet of air entering the mine per minute, and measured 13,600 cubic feet of air per minute returning through the return air course. I found the miners in Nos. 2 and 3 right rooms working too far ahead of the air, and ordered crosscuts driven at the face of the rooms so as to give the air a chance to circulate up to the face of the workings; otherwise I found the mine in fair condition.

October 28, 1897.—On this date I inspected No. 2 slope of the Monero mine. I measured 6,000 cubic feet of air entering the slope per minute. At the time of my visit the only work being done in this mine was the driving of the slope. I found the workings in fair condition. I found that the cars were being hoisted out of the slope without using an iron drag, and ordered the superintendent to have a drag attached to the last car on every trip of cars hoisted out of the mine. This drag is attached for the purpose of derailing the cars should the rope break.

COOK & WHITE MINE.

[James Duggan, superintendent; William Brown, pit boss.]

This mine is located 3 miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, bituminous; thickness of vein, 3 feet 6 inches; total output fiscal year, 115,000 tons; estimated value of output, $172,500; value of improvements this year, $5,000; average number of men employed outside, 25; average number of men employed inside, 250; average number of boys employed inside, 10; where coal is marketed, New Mexico, Arizona, California, Old Mexico, and Texas; number of days mine worked, 278.

This mine is situated on a branch of the Atchison, Topeka and Santa Fe Railroad, which connects with the main line at Waldo Station. The product of the mine is sold to the Atchison, Topeka and Santa Fe Railroad, California, Texas, and Old Mexico, and has a capacity of 700 tons per day. This mine is ventilated by two fans.

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RECORD OF INSPECTION.

September 8, 1897.—On this date I inspected the Cook & White mine. I measured 27,000 cubic feet of air entering the mine per minute, and measured 30,405 cubic feet of air returning through the return air course. I then took air measurements throughout the workings of the mine and found the air distributed as follows:

	Cubic feet of air.
Last crosscut, first left entry	8,610
First left room in first left dip plane	2,840
Second left room in first left dip plane	3,000
No. 4 room on right of first left dip plane	630
No. 3 room on right of first left dip plane	2,400
No. 2 room on right of first left dip plane	9,450
Last crosscut between first left air course and No. 1 right room on left dip plane	12,600
Main return above No. 2 left entry	11,900
Face of second left main entry	7,600
Last crosscut No. 2 left entry	14,800
Face of No. 2 left back entry	6,720
Last return on left of No. 2 slope	12,250
Bottom of slope	8,800
Last return on right of No. 2 slope	11,560
Above lower splits, near bottom of slope	25,850
Last crosscut between front and back entry on second right	11,700
Last crosscut between first right back entry and first left room on first right dip plane	13,200
Last crosscut between second and third left rooms on right dip plane	10,125
Last crosscut between third and fourth left rooms on right dip plane	9,360
Last crosscut between fourth and fifth left rooms on right dip plane	7,245
Last crosscut between fifth and sixth left rooms on right dip plane	8,660
Last crosscut between sixth and seventh left rooms on right dip plane	6,650
Return air at bottom of right dip plane	2,475
Face of No. 8 right room, right dip plane	2,750
Last crosscut between Nos. 6 and 7 right rooms	7,770
Last crosscut between Nos. 5 and 6 right rooms	8,750
Last crosscut between Nos. 4 and 5 right rooms	7,000
Last crosscut between Nos. 3 and 4 right rooms	6,300
Last crosscut between Nos. 2 and 3 right rooms	9,900
First right entry at face of workings	2,240
Last crosscut, first right, between front and back entry	6,825
Return at No. 3 fan	18,720
Return at No. 1 fan	11,685

I found the workings of the mine well timbered and in good condition.

October 14, 1897.—On this date I again inspected the Cook & White mine and took air measurements, and found the measurements to be as follows:

	Cubic feet air.
Intake	30,000
Return at No. 1 fan	14,760
Last crosscut between Nos. 1 and 2 left rooms on left dip plane	5,120
Face of No. 3 left room	5,000
Last crosscut between Nos. 3 and 4 left rooms	8,750
Last crosscut between Nos. 4 and 5 left rooms	6,600
Last crosscut between Nos. 5 and 6 left rooms	9,100
Bottom of left dip plane	3,000
Last crosscut between Nos. 1 and 2 right rooms on left dip plane	12,700
Last crosscut between Nos. 2 and 3 right rooms	8,400
Last crosscut between Nos. 3 and 4 right rooms	6,000
Last crosscut between Nos. 4 and 5 right rooms	8,775
Last crosscut between Nos. 5 and 6 right rooms	7,995
Face of second left main entry	6,600
Last crosscut on second left entry between front and back entry	9,000
Face of second left entry	10,200
Slope above lower splits	29,700
Last return on left side of slope	12,045
Bottom of slope	6,975
Last return on right of slope	10,500

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October 15, 1897.—On this date I continued my inspection of the Cook & White mine and took air measurements throughout the workings as follows:

	Cubic feet air.
Face of second right entry	720
Last crosscut between front and back entry	8,550
Face of second right back entry	4,042½
Bottom of right dip plane	10,125
Last crosscut between Nos. 2 and 3 right rooms, right dip plane	4,050
Last crosscut between Nos. 3 and 4 right rooms	3,150
Last crosscut between Nos. 4 and 5 right rooms	6,270
Last crosscut between Nos. 5 and 6 right rooms	5,800
Last crosscut between Nos. 6 and 7 right rooms	7,400
Last crosscut between Nos. 7 and 8 right rooms	2,700
Last crosscut near face of first right entry	4,800
Last crosscut between first right main and No. 1 left room on second raised plane	5,600
Last crosscut between Nos. 1 and 2 left rooms	3,960
Top of second raised plane	2,160
Return at No. 3 fan	18,240

I found the workings of the mine well timbered and in good condition.

November 23, 1897.—I again inspected the Cook & White mine. I measured 39,250 cubic feet of air entering the mine per minute, and took air measurements throughout the workings of the mine and found the air distributed as follows:

	Cubic feet air.
Above lower air splits in slope	35,750
Left return near bottom of slope	15,600
Right return near bottom of slope	18,300
Face of No. 3 left entry	2,628
Last crosscut at bottom of slope to back slope	2,100
Face of second right back entry	5,880
Last crosscut between No. 2 front and back entry	12,150
Face of No. 2 right main entry	3,120
Last crosscut between Nos. 4 and 5 right rooms, right dip plane	12,920
Last crosscut between Nos. 8 and 9 right rooms	9,135
Last crosscut between Nos. 9 and 10 right rooms	6,600

November 24, 1897.—I continued my inspection of the Cook & White mine and took air measurements throughout the workings as follows:

	Cubic feet air.
Last crosscut first left entry	9,800
Last crosscut between Nos. 2 and 3 rooms, left dip plane	10,600
Bottom of left dip plane	2,100
Crosscut between Nos. 1 and 2 rooms	5,800
Air course, first right back entry	16,560
Face of first right entry	3,150
Last crosscut between front and back entry, first right	14,760
Last crosscut between first right entry and No. 1 left room on plane	1,368
Last crosscut between Nos. 3 and 4 left rooms on second raised plane	7,200
Top of No. 2 raised plane	2,400
Face of second left main entry	3,960
Last crosscut, second left main entry	7,940
Face of second left back entry	4,675
Face of No. 1 raised plane	3,744
Return at No. 3 fan	21,700
Return at No. 1 fan	14,350
Intake, this date	35,000

I found the workings of the mine in good condition.

December 16, 1897.—I again inspected the Cook & White mine. I measured 44,000 cubic feet of air entering the mine per minute, and measured 37,400 cubic feet of air traveling above the lower air splits on the slope.

	Cubic feet air.
Left return near bottom of slope	11,395
Right return near bottom of slope	18,200
Bottom of slope	11,500

I found the air distributed throughout the workings in compliance with the law, and found the workings in good condition.

December 17, 1897.—I continued my inspection of the Cook & White mine. I found the miners working too far in advance of the air in the second left entry and ordered a crosscut driven between the main and back entry, so as to force the air up to the f

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of the workings. In all other working places in the mine I found the ventilation good. The crosscut was commenced, and as soon as completed I would consider the mine in good condition.

January 21, 1898.—On this date I inspected the machinery of the Cook & White mine and found the machinery in good condition.

January 22, 1898.—I inspected the workings of the Cook & White mine which are located on the left side of the main slope, and took air measurements, which I found to be as follows:

	Cubic feet air.
Intake	41,750
Return on left side at No. 1 fan	20,000
Last crosscut near face of first left entry	15,345
Last crosscut between Nos. 1 and 2 left rooms, first left dip plane	4,800
Last crosscut between Nos. 2 and 3 left rooms	3,500
Last crosscut between Nos. 7 and 8 right rooms	8,800
Last crosscut between Nos. 9 and 10 right rooms	6,600
Last crosscut between Nos. 5 and 6 left rooms	4,000
Last crosscut on second left main entry	5,250
Face of second left back entry	6,100
Face of second left main entry	5,125
Above lower air splits	38,500
Left return on main slope, near bottom of slope	12,540
Bottom of slope	5,580
Face of lowest crosscut on main to back slope	3,840
Right return on main slope, near bottom	19,760

January 24, 1898.—I continued my inspection of the Cook & White mine and took air measurements on the right side of the slope, as follows:

	Cubic feet air.
Last crosscut on second right entry	15,200
Face of second right back entry	3,465
Face of second right main entry	6,240
Face of No. 11 left room, first right dip plane	3,120
Crosscut between Nos. 10 and 11 left rooms	10,320
Face of No. 10 left room	3,600
Crosscut between—	
10 and 11 right rooms, first right dip plane	10,220
9 and 10 right rooms, first right dip plane	4,810
8 and 9 right rooms, first right dip plane	11,880
7 and 8 right rooms, first right dip plane	11,900
6 and 7 right rooms, first right dip plane	13,750
5 and 6 right rooms, first right dip plane	11,900
4 and 5 right rooms, first right dip plane	2,860
Face of first right main entry	1,875
Last slant between first right front and back entries	12,000
Last crosscut between first left raised plane and first right entry	9,000
Crosscut between—	
Nos. 1 and 2 left rooms, second raised plane	7,830
Nos. 2 and 3 left rooms, second raised plane	8,640
Nos. 3 and 4 left rooms, second raised plane	5,580
Nos. 4 and 5 left rooms, second raised plane	5,400
Nos. 5 and 6 left rooms, second raised plane	4,350
Nos. 6 and 7 left rooms, second raised plane	2,240
Face of No. 8 left room, second raised plane	800
Crosscut between—	
Nos. 6 and 7 right rooms, second raised plane	2,240
Nos. 4 and 5 right rooms, second raised plane	1,400
Return to No. 3 fan	28,800
Main intake on this date	43,500

I found the workings of the mine to be well ventilated and found some carbureted hydrogen gas at the face of the second right back entry and ordered a crosscut driven between the front and back entries. The crosscut was commenced at once.

January 26, 1898.—On this date the miners who were working in the second left entry of the Cook & White mine reported the finding of some carbureted hydrogen gas at the face of the entry. I immediately went down the mine into where the gas was reported and found some gas generating at the face of the entry. I ordered the canvas brattice extended up to the face of the workings, and ordered a crosscut driven from the face of the main entry to the back entry, and ordered the last crosscut bratticed up, so as to force all the air to the face of the workings. After this work had been completed the gas disappeared.

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January 29, 1898.—On this date I was informed that the crosscuts in the second right and second left entries of the Cook & White mine had been completed. I again went down into the mine and found that the crosscuts had been driven according to my orders of the 24th and 26th.

I measured 9,470 cubic feet of air traveling at the face of the second left entry and found very little gas in the entry. I measured 16,920 cubic feet of air traveling in the crosscut at the face of the second right entry and found no gas in the front or back entries. I ordered the superintendent to allow nothing but safety lamps to be used in places where the slightest particle of carbureted hydrogen gas was known to exist.

February 17, 1898.—I again inspected the underground workings of the Cook & White mine. I measured 35,000 cubic feet of air entering the mine per minute, and took air measurements throughout the workings, which were as follows, viz:

	Cubic feet air.
Last crosscut between first left main and back entry	8,000
Face of second left main entry	4,085
Last crosscut between second left main and back entry	4,860
Face of second left back entry	2,880
Second left air course, outside of No. 1 slant	7,700
Second left back entry, outside of No. 2 slant	9,890
Above air splits near bottom of slope	33,000
Bottom of slope	14,400
Last return on right of slope	15,750
Last return on left of slope	11,400
Face of second right entry	6,130
Crosscut, second right entry	14,630
Face of second right back entry	4,250

February 18, 1898.—On this date I continued my inspection of the Cook & White mine and inspected the workings on the right side of the main slope; also inspected the bottom of the slope. I found a small amount of carbureted hydrogen gas at the bottom of the slope and ordered the canvas brattice extended up to the face of the workings. I then took air measurements as follows:

	Cubic feet air.
Last crosscut between first right main and back entry	9,230
Face of first right main entry	4,970
Face of first right back entry	6,840
Last crosscut between No. 1 left room and first right main entry	9,360
Last crosscut between Nos. 1 and 2 left rooms, on No. 1 raised plane	8,000
Last crosscut between Nos. 2 and 3 left rooms	7,525
Face of No. 1 raised plane	2,500
Last crosscut between Nos. 7 and 8 left rooms	4,100
Last crosscut between Nos. 6 and 7 right rooms	1,120
Return at No. 3 fan	27,000
Return at No. 1 fan	16,800

I found the workings of the mine to be well ventilated and found the mine in fair working condition.

March 15, 1898.—I inspected the hoisting machinery, fans, ropes, and boilers belonging to the Cook & White mine, and found the machinery in good condition.

March 16, 1898.—On this date I again inspected the workings on the left side of the slope of the Cook & White mine. Also the bottom of the slope and the second right entries. I measured 39,750 cubic feet of air entering the mine per minute. I measured 18,000 cubic feet of air traveling at the bottom of the slope. I discovered a small amount of carbureted hydrogen gas in No. 3 right entry, which had been started near the bottom of the slope, and I ordered the canvas brattice extended up to the face of the workings of said entry.

March 17, 1898.—I continued my inspection of the Cook & White mine. I inspected No. 1 right entries, also the rooms on No. 2 right raised plane. I found the workings which I inspected in good condition and found the ventilation good throughout the workings.

March 18, 1898.—I again inspected the workings at the bottom of the slope and No. 3 right entry. I found that the canvas brattice had been extended up to the face of the workings of No. 3 right entry according to my instructions of March 16, and found that the gas had disappeared from the entry. I then inspected No. 1 right entries, also the rooms on No. 2 right raised plane. I found the places above mentioned in good condition and found the ventilation good throughout the workings.

April 11, 1898.—On this date I inspected all of the safety lamps which were being used in the Cook & White mine. I found the lamps in good condition.

April 13, 1898.—I inspected the Cook & White mine. I measured 40,000 cubic feet of air entering the mine per minute, and measured 34,100 cubic feet of air tra

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ing at the bottom of the slope. I found a small quantity of gas at the bottom of the slope, also at the face of the third right entry, and had the canvas brattice extended up to the face of the workings and removed the gas. I also inspected the main air courses and found them in good condition.

April 14, 1898.—I continued my inspection of the Cook & White mine. I inspected the rooms of Nos. 1 and 2 raised planes and found them well ventilated. Found the workings well timbered and in good condition.

April 15, 1898.—On this date I inspected No. 1 left dip plane of the Cook & White mine and the rooms thereon. I found the ventilation good throughout the workings and found the rooms well timbered and in fair condition.

April 16, 1898.—On this date I inspected the rope which is used for hoisting the loaded cars out of the Cook & White mine. I found the rope in bad condition, being much worn in one place. I called the superintendent's attention to the rope, and he informed me that he would have the rope attended to on Sunday when the mine was not being operated.

June 14, 1898.—I again inspected the machinery of the Cook & White mine and found that nothing had been done with main hauling rope on the Cook & White mine and ordered the superintendent to replace the old rope with a new one as soon as possible. The superintendent informed me that a new rope had been ordered and would be put in place just as soon as it arrived, and on Sunday, 18th, the new rope was put in place.

June 15, 1898.—On this date I commenced the inspection of the underground workings of the Cook & White mine, and while inspecting the mine, about 9 o'clock a. m., a miner informed me that a fire had been discovered in room No. 9 on the first right dip plane. I immediately went down the dip plane to where the fire was reported, and after looking the situation over had a force of men put to work extending the pipe line from the main pipe line to the place where the fire had occurred. After the pipe line had been extended I caused a hose to be attached to the pipe line. I then had the pump started, and with a force of men commenced the work of extinguishing the fire. A force of men was also employed to work all night and hold the fire in check. On the morning of the 16th I again visited the place where the fire was and found that very little progress had been made in extinguishing the fire, and found it a very difficult matter to handle. I worked all this day with men in trying to extinguish the fire. I also had a force of men ordered to work all that night and keep a constant stream of water on the fire. On the morning of the 17th I again visited the place where the fire had originated and found that the fire had been almost extinguished and wholly under control, and at about 2 p. m. no signs of fire could be seen. I then ordered that all débris in rooms 9 and 10 be loaded into pit cars and hauled out of the mine. This work was commenced at once.

June 18, 1898.—On this date I inspected the underground workings of the Cook & White mine and took air measurements. The air measurements on this date were as follows:

	Cubic feet air.
Intake	40,000
No. 1 right entry	10,800
Crosscut, second raised plane	9,360
No. 3 left room, No. 2 raised plane	6,840
No. 5 left room, No. 2 raised plane	5,775
No. 7 left room, No. 2 raised plane	3,360
First raised plane on second right entry	6,300
Last crosscut, face of second right entry	8,990
Third left entry, near bottom of slope	3,920
Right back slope	21,440
Left back slope	8,500
Above air splits near bottom of slope	26,000
Back air course, second left entry	7,800
Last crosscut between front and back entries, second left	4,350
Bottom of second left raised plane	3,000
Return at No. 1 fan	18,000
Return at No. 3 fan	24,000

I found the ventilation good throughout the workings of the mine, and found the mine in fair working condition.

June 22, 1898.—On this date I was informed by a miner that considerable gas had accumulated in rooms 9 and 10 on the first right dip plane, where the fire had originated. I immediately visited the above-mentioned rooms and found considerable gas in room No. 9. I measured the air which was traveling between rooms 9 and 10 and found only 750 cubic feet of air traveling per minute, which was not sufficient to sweep the gas away. The air course was very small and I ordered the air course enlarged, so that a sufficient quantity of air could travel through the air course and sweep the gas away and render it harmless. The work of enlarging the

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air course was commenced at once, and before the miners came out in the evening the gas had all disappeared.

This mine generates considerable carbureted hydrogen gas, but the superintendent uses every precaution to avoid accidents happening in the mine, and everything possible is done to protect the lives of the miners.

WHITE ASH MINE.

[James Duggan, superintendent; William Graham, pit boss.]

This mine is located about 2¼ miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, bituminous; thickness of vein, 5 feet 6 inches; total output fiscal year, 108,000 tons; estimated value of output, $162,000; value of improvements this year not given; average number of men employed outside, 23; average number of men employed inside, 100; average number of boys employed, 4; where coal is marketed, New Mexico, Arizona, Mexico, and Texas; number of days mine worked, 278.

This mine is situated on a branch line of the Atchison, Topeka and Santa Fe Railroad, which connects with the main line at Waldo Station. Capacity, about 400 tons per day. This mine is ventilated by a 15-foot Guible fan. All the pillars in this mine have been drawn to within 500 feet of the surface, and the probabilities are that the mine will be worked out within six months and closed down.

RECORD OF INSPECTION.

September 9, 1897.—On this date I inspected the underground workings of the White Ash mine. The fan was running 90 revolutions per minute, and I measured 36,960 cubic feet of air entering the mine per minute, and measured 40,000 cubic feet of air returning through the return air course. I then took air measurements throughout the workings of the mine and found the air distributed as follows:

	Cubic feet air.
Bottom of slope	22,200
Back slope	6,090
Right side of slope	10,760
Between third and fourth left entries	14,040
Between second and third left entries	11,160
Between first and second left entries	20,000
Bridge overcast, return from left side of slope	21,300

I found the workings of the mine in good condition and found the mine well ventilated.

October 16, 1897.—I again inspected the White Ash mine. I measured 38,550 cubic feet of air entering the mine per minute, and measured 41,200 cubic feet of air returning. I found the air distributed throughout the workings as follows:

	Cubic feet air.
Face of second left entry	20,000
Face of third left entry	12,420
Face of third right entry	9,600
Bottom of slope	25,200
Back slope	9,240
Bridge overcast, air from left side of slope	23,700

I ordered the pit boss to keep the miners well supplied with props in order to secure their working places, as the only work being done in this mine is the drawing of pillars.

November 22, 1897.—I again inspected the White Ash mine. The fan was running 80 revolutions per minute, and I measured 30,120 cubic feet of air entering the mine per minute, and measured 31,000 cubic feet of air returning. I found the ventilation good and found the workings of the mine in fair condition.

December 15, 1897.—I again inspected the White Ash mine. The fan was running 80 revolutions per minute, and I measured 31,360 cubic feet of air entering the mine per minute, and measured 31,500 cubic feet of air returning. I found some timbers broken in the second left entry and ordered new timbers put in. I also ordered the miners to keep drill holes 12 feet in length ahead of any new workings in the mine. This was done in order to keep from breaking through into old workings, which are supposed to have been made in the mine several years ago and are supposed to have large bodies of water therein.

December 21, 1897.—On this date I again visited the White Ash mine to ascertain if the miners were keeping drill holes ahead of the new work, according to my orders of December 15. I found the miners obeying my orders, and found two company men working with a diamond drill so as to keep holes drilled from 50 to 100 feet in advance of any new workings.

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January 21, 1898.—On this date I inspected the machinery of the White Ash mine. I found the water in the boilers very dirty, and ordered the boilers to be blown off and cleaned as soon as possible. I was informed that the work would be done on Sunday, when the mine was not working. The work was performed.

January 25, 1898.—On this date I again inspected the underground workings of the White Ash mine and took air measurements. The fan was running 83 revolutions per minute, and I measured 41,860 cubic feet of air entering the mine per minute, and measured 49,600 cubic feet of air returning through the return air course. I found the workings of the mine well ventilated and found the mine in good condition.

February 16, 1898.—I again inspected the underground workings of the White Ash mine. The fan was running 80 revolutions per minute and I measured 38,400 cubic feet of air entering the mine per minute and measured 43,875 cubic feet of air returning through the return air course. I found the workings of the mine well ventilated and found the mine in good condition.

March 15, 1898.—On this date I inspected the hoisting machinery, fans, ropes, and boilers belonging to the White Ash mine and found the same in good condition.

March 19, 1898.—On this date I again inspected the White Ash mine. The fan was running 82 revolutions per minute, and I measured 28,000 cubic feet of air entering the mine per minute. I then took air measurements throughout the workings of the mine and found a sufficient quantity of air traveling in the working places to comply with the law. I found a small quantity of carbureted hydrogen gas at the face of the entry known as the left dip entry, and had the brattice extended up to the face of the entry. After this was done the gas soon moved from the face of the entry and I considered the mine in good condition.

April 12, 1898.—I again inspected the underground workings of the White Ash mine. The fan was running 83 revolutions per minute, and I measured 41,560 cubic feet of air entering the mine per minute and measured 42,240 cubic feet of air returning per minute. I found the ventilation very good throughout the workings of the mine and found the workings of the mine in good condition.

June 14, 1898.—I again inspected the machinery of the White Ash mine and found the same in good condition.

June 20, 1898.—I again inspected the White Ash mine. The fan was running 83 revolutions per minute, and I measured 35,530 cubic feet of air entering the mine per minute and measured 36,840 cubic feet of air returning through the return air course. I found the air distributed throughout the workings in accordance with the law and found the workings in good condition.

LUCAS MINE.

[James Duggan, superintendent; William Brown, pit boss.]

Located 3 miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, anthracite; thickness of vein, 3 feet 9 inches; total output fiscal year, 25,000 tons; estimated value of output at mine, $100,000; depth of slope, 1,200 feet; value of improvements this year not given; average number of men employed outside, 40; average number of men employed inside, 100; average number of boys employed inside, 2; where coal is marketed, New Mexico, Arizona, California, Colorado, and Kansas; number of days mine worked, 177.

This mine is located on a branch of the Atchison, Topeka and Santa Fe Railroad, which connects with the main line of the road at Waldo Station, and has a capacity of about 450 tons per day. The mine is ventilated by a double 6-foot Murphey fan.

RECORD OF INSPECTION.

September 11, 1897.—On this date I inspected the Lucas mine. At the time of my visit to the mine it was not being operated. I inspected the underground workings and found them in good condition.

October 18, 1897.—I inspected the workings of the Lucas mine, which are located on the left side of the main slope. The only work being done on the left side of the mine was the drawing of pillars. I found the workings in fair condition.

October 19, 1897.—On this date I continued my inspection of the Lucas mine and took air measurements. I measured 15,800 cubic feet of air entering the mine per minute and measured 16,800 cubic feet of air per minute returning through the return air course. I found the mine well ventilated and found the workings well timbered and in good condition.

October 20, 1897.—On this date I inspected the old workings of the Lucas mine and found no gas (fire damp) in the old, abandoned workings and found the air courses in good condition.

November 26, 1897.—On this date I again inspected the Lucas mine. The fan was

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running 140 revolutions per minute, and I measured 11,000 cubic feet of air entering the mine per minute and measured 12,250 cubic feet of air returning through the return air course. I found the air distributed in compliance with the law, and found the workings of the mine in fair condition.

November 29, 1897.—On this date I inspected the machinery of the Lucas mine. I found that the fan was being run at 110 revolutions per minute, its regular speed being 150 revolutions, and I ordered the fan speeded up to 150 revolutions per minute.

December 18, 1897.—I again inspected the Lucas mine. The fan was running 180 revolutions per minute, and I measured 15,920 cubic feet of air per minute entering the mine and measured 16,450 cubic feet of air returning through the return air course. I measured 7,875 cubic feet of air traveling at the bottom of the slope.

	Cubic feet air.
Last crosscut in fourth right entry	1,920
Last crosscut in third right entry	2,400
Last crosscut, second left right entry	3,520

I found the mine in fair working condition.

January 27, 1898.—On this date I inspected the main hauling slope and Nos. 2, 3, and 4 right entries of the Lucas mine. I measured 16,800 cubic feet of air entering the mine per minute and measured 18,275 cubic feet of air returning. I found the air distributed throughout the workings of the mine in compliance with the law, and found the mine in good condition.

January 28, 1898.—I continued my inspection of the Lucas mine. I inspected No. 1 right entry and found the entry in good condition. I also inspected the hoisting engine, boilers, and ropes belonging to the Lucas mine and found the same in good condition.

March 21, 1898.—I again inspected the Lucas mine. The mine was not being operated on this date, but I examined the air courses and main entries and found the same in good condition. I also found the machinery in good condition.

June 21, 1898.—I again inspected the Lucas mine. I measured 9,130 cubic feet of air entering the mine per minute. I then measured the air just below the fourth right entry, and found only 3,150 cubic feet of air traveling per minute. I ordered that all stoppings along the slope be made air-tight, so as to conduct more air into the fourth right entry. At the time of my visit to the mine there were only 18 miners employed therein.

CARTHAGE MINE.

[Hilton & Luerra, operators.]

Located about 12 miles southeasterly direction from San Antonio, Socorro County, N. Mex. Kind of coal, soft bituminous; thickness of vein, 4 feet 6 inches; total output, fiscal year, 1,500 tons; estimated value of output, $3,000; depth of slope, 2,200 feet; value of improvements this year, $1,000; average number of men employed outside, 2; average number of men employed inside, 2; where coal is marketed, Socorro, San Marcial, Belen, and Magdalena, N. Mex.; number of days mine worked, 200.

The coal is hauled in wagons and shipped from San Antonio, N. Mex., to the different towns above mentioned along the Atchison, Topeka and Santa Fe Railroad. This mine has a capacity of about 50 tons per day and is ventilated by an air shaft. There is considerable development work done on the mine, and the coal is of a very good character, but having to haul 12 miles in wagons is too great an expense to compete with other mines which are situated on lines of railroad.

RECORD OF INSPECTION.

September 27, 1897.—On this date I inspected what is known as the Carthage Coal Company mine. I measured 1,750 cubic feet of air entering the mine per minute, and measured 1,787½ cubic feet of air returning per minute through the outcast. I found the main entry had been driven too far without a crosscut, and ordered a crosscut driven from the face of the main entry to the main return air way. At the time of my visit the mine was not being operated, but Mr. Givani Luerra informed me that he expected to do considerable work during the winter months.

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EMPLOYES.

The following tabulated statement shows the number of miners, day men, and boys employed in and about the coal mines of the Territory:

Counties.	Miners.	Boys.	Day men.	Total.
Bernalillo	792	14	118	924
Colfax	209	.....	152	361
Lincoln	.....	.....	.....	.....
Rio Arriba	32	.....	13	45
San Juan	.....	.....	.....	.....
Santa Fe	450	16	88	554
Socorro	2	.....	2	4
Total	1,485	30	373	1,888

In the column headed day men are included all men employed in and around the mines in any capacity except those actually engaged in mining.

During the fiscal year 1897–98 the total number of employes as reported to me by the various mining companies was one thousand eight hundred and eighty-eight (1,888), an increase of employes of five hundred and twenty-three (523), as against the number employed in the previous year.

Production of coal.

Name of mine.	Men employed.		Tons of coal mined.		Estimated value of product, 1897–98.
	1896–97.	1897–98.	1896–97.	1897–98.	
Bernalillo County.					
Beacon Hill	.....	3	.....	600	$1,080
Caledonia	43	.....	20,900	.....	.....
Catalpa	7	68	.....	4,356	8,000
Canavan & Bailey	10	8	3,100	800	1,200
Crown Point	165	156	42,333	61,194	92,000
Gallup	208	269	109,270	141,145	220,000
Otero	52	177	31,470	90,366	136,049
Rocky Cliff	33	35	15,500	22,000	33,000
Sunshine	49	125	53,364	48,450	80,000
W. A. Clark	.....	80	.....	3,500	4,000
Mulholland & Casna	.....	6	.....	200	400
Total	567	927	275,937	372,611	575,729
Colfax County.					
Blossburg	350	360	200,000	210,000	357,500
Mesa	5	5	1,200	1,000	1,750
Smith No. 2	7	8	2,067	2,972	5,201
Total	362	373	203,267	213,972	364,451
Rio Arriba County.					
Monero Nos. 1, 2, and 3	23	45	18,000	22,500	31,000
Socorro County.					
Carthage	2	4	1,224	1,500	3,000
Santa Fe County.					
Cook & White	100	285	98,500	115,000	172,500
Lucas	172	142	83,000	75,000	100,000
White Ash	97	127	93,900	108,000	162,000
Total	369	554	225,400	248,000	434,500

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Production of coal—Continued.

RECAPITULATION.

County.	Output for fiscal year.	Estimated value.	Percentage of output for Territory.
	Tons.		*Per cent.*
Bernalillo	372,611	$575,729	43.398
Colfax	213,972	364,451	24.922
Santa Fe	248,000	434,500	28.884
Rio Arriba	22,500	31,000	2.632
Socorro	1,500	3,000	.174
Total	858,583	1,408,680	100.000

Analysis of coal from the White Ash Mine of the Cerrillos Coal Railroad Company.

[Made by W. D. Church, December 2, 1893.]

COAL FROM MADRID, N. MEX., WHITE ASH MINE.

Water	per cent..	2.00
Volatile matter	do....	39.00
Fixed carbon	do....	53.76
Mineral ash	do....	5.24
Total	do....	100.00
Coke	do....	59.00
Character of coke, strong and tough.		
Color of ash, light yellowish gray.		
Character of ash, soft and light.		
Sulphur (as sulphide)	do....	.010
Sulphur (as sulphate)	do....	.022
Phosphorus	do....	.006
Specific gravity	do....	1.410
One cubic foot weighs	pounds..	88.125
Analysis of mineral ash:		
Silica	per cent..	26.93
Alumina	do....	32.41
Oxide of iron	do....	3.96
Calcium oxide	do....	24.68
Magnesium oxide	do....	10.32
Calcium sulphate	do....	.21
Alkalies, and loss	do....	1.49
Total	do....	100.00

COAL FROM RATON COAL AND COKE COMPANY.

Water	per cent..	.75
Volatile matter	do....	34.40
Fixed carbon	do....	56.93
Mineral ash	do....	7.92
Total	do....	100.00
Coke	do....	64.85
Character of coke, very strong and tough.		
Color of ash, very light ocher.		
Character of ash, soft and light.		
Sulphur (as sulphide)	do....	.016
Sulphur (as sulphate)	do....	.022
Phosphorus	do....	.014
Specific gravity	do....	1.291
One cubic foot weighs	pounds..	88.690

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Analysis of mineral ash:

Silica	per cent..	44.16
Alumina	do....	39.28
Oxide of iron	do....	2.95
Calcium oxide	do....	7.41
Magnesium oxide	do....	3.27
Sulphate of calcium	do....	.41
Alkalies, and loss	do....	2.52
Total	do....	100.00

From the column of percentages of production it will be seen that the output of coal from the Territory comes practically from four counties.

For the fiscal year ending June 30, 1898, there were reported 20 mines in operation, 4 less than during the previous year.

The production for the fiscal year 1897 and 1898 was 858,583 tons. This is an increase of production of 125,044 tons.

During the fiscal year there were reported to me as mine inspector 7 fatal accidents, the causes of which were as follows: By falls of rock, 3; falls of coal, 2; runaway cars, 1; firing blast, 1.

The following table shows the number of tons of coal mined for each life lost:

County.	Tons mined.	Lives lost.	Tons of coal mined to each life lost.
Bernalillo	372,611	1	372,611
Colfax	213,972	1	213,972
Santa Fe	248,000	5	49,600

The nonfatal accidents reported to me as mine inspector during the fiscal year were as follows: By falls of rock, 8; pit cars, 4; unclassified, 2.

The following table shows the number of tons of coal mined to each nonfatal accident:

County.	Tons mined.	Accidents.	Tons of coal mined to each nonfatal accident.
Bernalillo	372,611	4	93,152.3
Colfax	213,972	2	106,986
Santa Fe	248,000	8	31,000

ACCIDENTS.

Table of accidents of a fatal character reported to me as mine inspector for the fiscal year ending June 30, 1898.

Where accident occurred. Name of mine.	Date.	Name.	Character of injury.	Cause of death.
Blossburg mine, Blossburg, N. Mex.	Nov. 25, 1897	Wm. Sartoris	Skull crushed	Fall of coal.
Gallup mine, Gallup, N. Mex.	Mar. 3, 1898	Franz Dellazer	Fracture of part pubic bone.	Do.
Cook & White, Madrid, N. Mex.	Feb. 19, 1898	Bathisti Desidero.	Head completely mashed.	Do.
Do	Nov. 16, 1897	Benjamin Martinez.	Fractured base of skull.	Do.
Do	Mar. 26, 1898	Antonio Vignasa.	Skull crushed	Do.
Do	Apr. 8, 1898	John Foster	Fracture of six ribs penetrating lungs.	Struck by a piece of coal in firing shot.
White Ash mine, Madrid, N. Mex.	Dec. 5, 1897	J. H. Curley	Compound fracture of right leg and scalp wound.	Runaway car.

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RECORD OF FATAL ACCIDENTS.

November 25, 1897.—At Blossburg mine, William Sartoris, a miner, an Italian, age 45 years, had his skull and face crushed, and died almost immediately. Cause: The deceased was at work mining coal (undercutting) when coal fell on him, crushing his skull and face, producing death in about one hour. Left wife and eight children. No coroner's jury.

FATAL ACCIDENT—GALLUP MINE.

March 3, 1898.—Franz Dellazer, Austrian, age 37 years, was injured by a fall of rock, which caused his death. Cause: The deceased had his room in good condition, but a small piece of rock, close up against the coal face in the nature of a pot and feathered edge slip, dropped out without any warning, striking him, causing a fracture of the pubic bone, with internal injuries caused by part of the bone penetrating the intestines, also probable rupture of bladder. The deceased lived about seven hours after receiving the above injuries. No coroner's jury.

FATAL ACCIDENTS—COOK & WHITE MINE.

February 19, 1898.—At Cook & White mine, Bathisti Desidero, an Italian, age 35 years, had his head completely mashed, and died immediately. Cause: Fall of rock at face of his room. Number in family: Wife and two children. No coroner's jury.

November 16, 1897.—At the Cook & White mine, Benjamin Martinez, age 20 years, had his skull fractured; died in twenty minutes after the injury. Cause: He was taking down some rock in the face of his room, and after working at it for about an hour he gave it up and thought it was safe, and commenced taking out coal when the rock gave way and caught him, injuring him so he lived only twenty minutes. No coroner's report.

March 26, 1898.—Antonio Vignasa, Italian, age 32 years, was crushed by a fall of rock and instantly killed at Cook & White mine. No coroner's jury.

April 8, 1898.—At Cook & White mine, John Foster, an "Englishman," was injured at about 8.30 o'clock a. m., and died at 2.30 p. m. Cause: He was found 34 feet back in the entry behind a canvas curtain. He had put in a shot and retired when the explosion occurred. A piece of coal weighing about 15 pounds struck him in the side with fatal effect, causing a fracture of six ribs in right side, commencing third downward, the end of which perforated the lungs. Number in family: Wife and one child. No coroner's jury.

FATAL ACCIDENT—WHITE ASH MINE.

December 5, 1897.—J. H. Curley, Irishman, age 25 years, received a compound fracture of right leg, junction lower and middle third, also extreme lacerated wound under side of right knee joint, and scalp wound about the size of a silver dollar on crown of head. Cause: In letting down cars from the plane the miners place a prop upright from top to bottom of place where they are working; this should be put up secure enough to hold when the weight of the loaded car, which is let down the plane by means of a rope being put around the prop; but it seems that the deceased failed to make the prop secure and it came down. The man got entangled in the rope and received the injury, as stated above. He was removed to the hospital at Santa Fe, and died on December 8, 1897, at 12 o'clock midnight.

TABLE OF NONFATAL ACCIDENTS.

Name of mine.	Date.	Name.	Character of injury.	Cause.
Blossburg, Gardiner, N. Mex...	June 22, 1898	Antonio Lucero ..	Back broken.....	Fall of rock.
Do.....	Dec. 24, 1897	Jesus Gonzales ...	Leg broken.....	Do.
Cook & White, Madrid, N. Mex.	Sept. 23, 1897	Anton Bianichi...	Left leg broken...	Do.
Do.....	June 16, 1898	John Brown.....	Partial dislocation of back.	Do.
Do.....	July 7, 1897	John Tomasco....	Two scalp wounds	Shot went off on him.
Do.....	.....do	Emil Leplat	Severe contusion of right ankle joint.	Engineer jerked the trip.
White Ash, Madrid, N. Mex ...	Dec. 5, 1897	Elesio Mitchletti .	Simple fracture of right leg.	Runaway car.
Do.....	.....do	A. Mitchletti	Right leg broken .	Do.
Do.....	Nov. 1, 1897	Thos. Thomas	Left leg broken...	Fall of rock.
Lucas Mine, Madrid, N. Mex...	Mar. 9, 1898	John Beirman	Sprained back	Do.
Otero Mine, Gallup, N. Mex....	Jan. 5, 1898	August Alary	Leg dislocated....	Foot caught in loaded car.
Do.....	Jan. 18, 1898	Peter Golino.....	Struck in eye with pick.	Carelessness.
Do.....	June 9, 1897	Jas. Martines.....	Leg broken.....	Fall of rock.
Sunshine, Gallup, N. Mex.....	Feb. 25, 1898	Ed. Crisen.....	Double fracture of leg.	Do.

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RECORD OF NONFATAL ACCIDENTS.

December 24, 1897.—At Blossburg mine, Jesus Gonzales, a laborer, age 40 years, was injured by a fall of slate rock weighing about 200 pounds. He was working with mining machine when the rock fell on him, breaking his leg.

June 22, 1898.—At Blossburg mine, Antonio Lucero, Mexican, age 32 years, was injured by a fall of rock, having his back broken. Cause: He was loading coal by the ton, and did not examine the roof before commencing work. The rock fell on him while in a stooping position, and broke his back. On August 5 I received a letter from the acting superintendent of the mine advising me that the man was still living.

September 23, 1897.—At the Cook & White mine, Anton Bianichi, an Italian, age 34 years, was injured by having his left leg broken. Cause: He was working in the first right dip plane, and was caught by a fall of rock, breaking his leg.

June 16, 1898.—At Cook & White mine, John Brown, Scotchman, age 50 years, was injured in the first left dip plane. Cause: Was caught by a fall of rock, causing partial dislocation of back.

July 7, 1897.—At Cook & White mine, Emil Leplat, Frenchman, age 26 years, was injured in No. 1 right entry. Cause: Engineer jerked the trip suddenly and caught him, causing severe contusion of right ankle joint, fracture right fibula in lower third.

July 7, 1897.—At Cook & White mine, John Tomasoo, Italian, age 35 years, was injured in No. 2 plane. Cause of injury: Shot went off on him, causing two scalp wounds—one over right frontal bone, 6 inches long, and one 4 inches long above and to right of occipital protuberance.

November 1, 1897.—At White Ash mine, Thomas Thomas, a native of Wales, age 27 years, was injured in No. 3 right entry. Cause: Was caught by a fall of rock, breaking his left leg.

December 5, 1897.—At White Ash mine, Elesio Mitchletti, Italian, age 30 years, was injured in second left plane on second left entry. Cause: He got entangled in a rope while letting down a pit car loaded with coal and received a simple fracture of the right leg in middle third.

March 9, 1898.—At the Lucas mine, John Beirman, German, age 43 years, was injured at face of No. 2 raised plane. Cause: A fall of rock caught him, spraining his back.

January 18, 1898.—At Otero mine, Peter Golino, Italian, age 48 years, was injured by a piece of coal striking him in the eye.

January 5, 1898.—At Otero mine, August Alary, a native of France, age 30 years, had his leg dislocated. Cause: He was dropping car from face of room and was in front of it; tried to get out of the way of the car, but was caught and fell, dislocating leg.

February 28, 1898.—At the Otero mine, James Martines, Mexican, age 28 years, was injured by having his thigh bone broken. Cause: He was undercutting coal with a pick when a piece of the roof fell on him and broke his thigh.

February 25, 1898.—At Sunshine mine, Ed. Crisen, Italian, age 25 years, was injured in slope (air course). Cause: He was mining coal when a piece of the roof known as a pot slip fell on him, causing a double fracture of his leg.

Table showing name of mine, method of working, ventilation, power, etc.

Name of mine.	Method of working.	Ventilation.	Power.
Beacon Hill	Slope, double entry, room and pillar	Furnace	Steam.
Canavan & Bailey	Slope, single entry, room and pillar	do	Do.
Crown Point	Double compartment shaft	Fan	Do.
Gallup	Slope, double entry, room and pillar	do	Do.
Otero	Drift, single entry, room and pillar	Furnace	Do.
Rocky Cliff	do	do	Horse.
Sunshine	Slope, double entry, room and pillar	Fan	Steam.
Blossburg	Drift, double entry, room and pillar	do	Do.
Mesa	Drift, single entry, room and pillar	Air shaft	Horse.
Smith No. 2	do	Furnace	Do.
Monero Nos. 1, 2, and 3	Slope, single entry, room and pillar	do	Steam.
Carthage	do	Air shaft	Horse.
Cook & White	Slope, double entry, room and pillar	Two fans	Steam.
Lucas	do	Fan	Do.
White Ash	do	do	Do.
Catalpa	do	Furnace	Do.
W. A. Clark	do	Natural	Do.
Mulholland & Casna	Slope, single entry, room and pillar	Air shaft	Horse.

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AIR MEASUREMENTS.

The following table shows the number of cubic feet of air per minute entering the mines and returning, measured at intake and outlet:

Name of mine.	Date.	Intake.	Outlet.	Name of mine.	Date.	Intake.	Outlet.
Otero	Sept. 18, 1897	4,500	5,000	Monero	Oct. 27, 1897	13,440	13,600
	Nov. 11, 1897	10,290	10,550	Monero No. 2	Oct. 28, 1897	6,000	.....
	Jan. 11, 1898	12,080	12,405	Cook & White	Sept. 8, 1897	27,000	30,405
	Mar. 11, 1898	8,050	8,400		Oct. 14, 1897	30,000	.....
Gallup	Sept. 21, 1897	24,000	24,075		Oct. 15, 1897	.....	33,000
	Nov. 15, 1897	30,000	30,300		Nov. 23, 1897	39,250	.....
Sunshine	Sept. 16, 1897	27,840	25,200		Nov. 24, 1897	35,000	36,050
	Nov. 13, 1897	26,460	26,250		Dec. 16, 1897	44,000	.....
	Jan. 12, 1898	28,600	28,800		Jan. 21, 1898	41,750	39,760
	Mar. 9, 1898	40,000	41,000		Jan. 24, 1898	43,500	43,200
Crown Point	Sept. 17, 1897	16,660	16,800		Feb. 17, 1898	35,000	.....
	Nov. 12, 1897	17,920	18,000		Feb. 18, 1898	.....	43,800
	Jan. 13, 1898	19,950	21,840		Mar. 16, 1898	39,750	.....
	Mar. 12, 1898	19,950	20,540		Apr. 13, 1898	40,000	.....
Rocky Cliff	Sept. 15, 1897	6,300	6,475		June 18, 1898	40,000	42,000
	Nov. 16, 1897	2,730	3,040	White Ash	Sept. 9, 1897	36,960	40,000
	Jan. 10, 1898	6,500	6,550		Oct. 16, 1897	38,550	41,200
	Mar. 9, 1898	5,510	6,450		Jan. 25, 1898	41,860	49,600
Mulholland & Casna	Jan. 14, 1898	4,600	.....		Feb. 16, 1898	34,400	43,875
Blossburg	Oct. 9, 1897	8,400	.....		Mar. 19, 1898	28,000	.....
	Dec. 9, 1897	18,840	19,040		Apr. 12, 1898	41,560	42,240
	Feb. 10, 1898	8,160	.....		June 20, 1898	35,530	36,840
	Feb. 11, 1898	37,500	39,000	Lucas	Oct. 19, 1897	15,800	16,800
	Mar. 25, 1898	34,560	36,015		Nov. 26, 1897	11,000	12,250
	Apr. 21, 1898	33,600	34,200		Dec. 8, 1897	15,920	16,450
	June 25, 1898	26,400	27,000		Jan. 27, 1898	16,800	18,275
Smith Mine No. 2	Oct. 6, 1897	2,160	2,340		June 21, 1898	9,130	.....
	Feb. 8, 1898	1,960	2,180	Carthage	Sept. 27, 1897	1,750	1,787
	Mar. 23, 1898	1,800	1,950				
	Apr. 19, 1898	2,100	2,275				
	June 23, 1898	2,400	2,560				
Mesa	Oct. 11, 1897	1,750	1,800				
	June 28, 1898	1,400	1,575				

MINES NOT INSPECTED.

During the fiscal year I have written letters several times to coal-mine operators in San Juan and Lincoln counties, N. Mex., requesting that a report of the mines be forwarded to me, giving the production, number of men employed, etc., but I have received no reply. Owing to the location of the mines being a great distance from the railroad, and only a very few if any men being employed, and only during the winter months, I did not deem it necessary to inspect the properties. In former years there were not more than 7 or 8 men employed in either San Juan or Lincoln counties

MINES NOT IN OPERATION.

Green & Bailey mine, Santa Fe County, not operated this year.
Hartsell mine, Colfax County, not operated this year.
Mulholland mine, Bernalillo County, not operated this year.
Smith mine No. 1, Colfax County, not operated this year.
Sterling mine, Rio Arriba County, not operated this year.
Waldo mine, Santa Fe County, not operated this year.
Miller Gulch mine, Santa Fe County, not operated this year.

NEW MINES OPENED THIS YEAR.

W. A. Clark mine, Bernalillo County.
Mulholland & Casna mine, Bernalillo County.

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Prices paid for labor, mining coal, etc., by the Crescent Coal Company, Gallup, N. Mex.

Mining coal per ton of 2,000 pounds, screened coal		$0.70
Driving entry	per yard	2.00
Room turning		4.00
Crosscuts	per yard	1.50
Timbers	per set	.50
Company men under ground	per day	3.00
Boys attending to doors	do	1.00
Engineers	per month	80.00
Boiler men	per day	2.25
Tipple men	do	3.00
Blacksmiths	do	3.00
Blacksmiths' helpers	do	2.50
Carpenters	do	3.00

Prices of powder and supplies for miners, Crescent Coal Company.

Powder	per keg	$4.00
Lamp oil	per gallon	1.25
Lamp cotton	per ball	.05
Squibs	per box	.25

Prices paid for labor, mining coal, etc., by Cerrillos Coal Railroad Company, at Madrid, N. Mex.

Mining coal per ton of 2,000 pounds, screened—		
White ash		$0.70
Cook & White		.85
Lucas		.90
Driving main entry	per yard	3.00
Driving back entry	do	1.75
Driving crosscuts	do	1.50
Driving main slope when in natural coal	do	6.00
Driving main slope when in faults or solid rock	do	9.00
Driving raised planes	do	1.75
Turning rooms off entry and driving room, 30 feet		8.00
Setting rough 7-foot timbers		1.00
Setting timbers over 7 feet in length		2.00
Setting 7-foot props		.07
Wages paid—		
Pit bosses	per day	3.00
Fire bosses	do	3.00
Track layers	do	2.75
Company timbermen	do	2.75
General company men	do	2.60
Single mule drivers	do	2.60
Team drivers	do	2.75
Rope riders	do	3.00
Car couplers	do	2.75
Assistants to company men	do	2.00

Prices of powder and supplies for miners of the Cerrillos Coal Railroad Company.

Powder	per keg	$2.60
Lamp oil	per gallon	.85
Lamp cotton	per ball	.05
Squibs	per box	.25

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WHITE ASH MINE.

Statement of work done in the White Ash mine for the fiscal year ending June 30, 1898.

Name of entry.	Length.		Number of rooms.		Remarks.
	Total feet.	Driven since June 30, 1897.	Total feet.	Turned since June 30, 1897.	
Main slope	3,465	.....	.....	.....	Pillars pulled to within 1,100 feet of mouth.
First north	700	.....	9	.....	Abandoned prior to July 1, 1897.
Second north	1,587	.....	21	.....	All pillars pulled.
Third north	2,010	.....	25	.....	Do.
Fourth north	2,170	.....	28	.....	Do.
Fifth north	1,655	.....	22	.....	Do.
Sixth north	1,540	.....	19	.....	Do.
Seventh north	1,844	.....	14	.....	Do.
Eighth north	1,332	.....	11	.....	Do.
Ninth north	1,060	.....	7	.....	Do.
Tenth north	840	.....	17	.....	Do.
First south	1,000	.....	15	.....	Abandoned prior to July 1, 1897.
Second south	1,960	.....	21	.....	Pillars pulled back to main slope.
Third south	1,990	.....	22	.....	Do.
Fourth south	1,210	.....	14	.....	Do.
Fifth south	670	.....	7	.....	Do.
Sixth south	580	.....	5	.....	Do.
Seventh south	270	.....	4	.....	Do.
Eighth south	200	.....	.....	.....	Do.
New entry above first south.	900	900	7	7	Stopped June 30, 1898; starting back on pillars.

New entry driven north above old first north, a distance of 1,100 feet; 20 rooms turned and pillars drawn back to within 600 feet of main slope, and all work done since June 30, 1897.

LUCAS MINE.

Statement of work done in the Lucas mine for the fiscal year ending June 30, 1898.

Name of entry.	Length.		Number of rooms.		Remarks.
	Total feet.	Driven since June 30, 1897.	Total feet.	Turned since June 30, 1897.	
Main slope	1,400	.....	.....	.....	
First north	260	.....	4	.....	Main return for air.
Second north	980	.....	15	.....	Pillars pulled to within 275 feet of slope.
Third north	810	.....	12	.....	Pillars pulled to within 250 feet of slope.
Fourth north	570	.....	6	.....	Do.
Fifth north	100	.....	.....	.....	Do.
First south	1,700	.....	24	.....	Pillars pulled to within 1,000 feet of slope.
Second south	2,628	723	29	2	Entry being further developed.
Third south	1,522	260	19	3	Entry not driven since Jan., 1898.
Fourth south	1,971	900	21	10	Entry being further developed.
Fifth south	500	.....	5	.....	Entry not driven since Sept., 1897.

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COOK & WHITE MINE.

Statement of work done in the Cook & White mine for the fiscal year ending June 30, 1898.

Name of entry.	Length.		Number of rooms.		Remarks.
	Total feet.	Driven since June 30, 1897.	Total feet.	Turned since June 30, 1897.	
Main slope	1,814	270	14	.....	Stopped Apr. 1, 1898; new slope being driven 800 feet north.
New slope	320	320	.....	.....	
First north	1,282	.....	36	30	Entry stopped; all rooms finished; no pillars pulled.
Second north	2,170	1,703	10	10	Stopped temporarily.
Third north	210	210	.....	.....	Being further developed.
First south	4,047	1,627	76	38	12 rooms working.
Second south	2,442	1,886	6	6	Being further developed.
Third south	471	471	.....	.....	Do.

PRODUCTION OF COKE.

All the coke produced in the Territory was produced at the Blossburg mine, Gardiner, Colfax County, N. Mex.

The amount produced was 2,275 tons during the fiscal year. Very little coke was produced during the year on account of the coal washers not being completed till very late in fiscal year.

The coke produced was shipped and sold to the different smelting plants in the Territory of Arizona.

GENERAL REMARKS.

The thickness of the veins in nearly all of the mines where fire damp is generated is favorable to their proper ventilation, and while gas can not be prevented from generating, it could undoubtedly be prevented in the entries and rooms by having proper ventilation; also by crosscuts being driven more closely together, thus sweeping the gas out as fast as it generates.

Every superintendent and pit boss should make it his imperative duty to provide ventilation as the work advances, and he should not delay until he is compelled to make the proper provisions by allowing gas to form so as to cause severe and disastrous explosions.

Proper care and provisions and the knowledge that "eternal vigilance is the price of safety" would be a safeguard to the investments of the owner, and security for the life and limbs of those employed in the mines.

There are no Territorial laws governing the coal industries; and when the importance of the subject is properly represented before the Territorial legislature, certain restrictions should be placed on the manner of handling powder, as well as to ventilation and other matters, which would insure greater safety and protection to the miners and other persons connected with this growing industry

In all the coal mines throughout the Territory the mine officials have expressed their willingness to comply with all requirements of the United States laws governing coal mining, and the main problem which confronts the mine inspector is to get the miners impressed with the necessity of looking out for themselves and use ordinary precaution in their own behalf.

A coal miner of experience needs no prompting or hints that the roof of his entry or room is in bad condition, and he should not need to be compelled to put in the necessary posts or timber to insure his protection; and carelessness in this respect often not only jeopardizes his life, but works to the injury of other miners and to the detriment of the management.

There may be some of the workingmen or miners who would like to express their opinions relative to the ventilation or workings of the mine, and probably some would wish to accompany the mine inspector on his tour through the mines. This the inspector would heartily indorse, and would suggest that the miners select one of their number to accompany him through the mine while inspecting. A complaint may be made that the inspector on visiting the mine always asks for the superintendent or pit boss. There are two reasons why the inspector goes to the superintendent or pit boss.

In the first place, the miner does not wish to lose a day or so of work; and the second reason is that the pit boss is a responsible party for all defects in the working the mine, and is the proper person for the inspector to give instructions and orders

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to relative to ventilation and timbering at any point that the inspector thinks needs regulating.

But what would materially assist the inspector in the performance of his duty would be for the miners or workmen to adopt a system of reporting the condition of the mine to the inspector. This plan would probably result in a material benefit to the workingmen and could result in no injury to those concerned who intended to comply with the law, and would have a tendency to compel those who are careless to do their duty.

Some of the workmen may say that they are afraid to complain to the inspector for fear of being discharged; but this should not be allowed. The inspector has a right to question the workmen, and they should feel that they have a right to furnish information required by the inspector.

INSTRUCTIONS AND RULES.

under which Cerrillos Coal Railroad Company mines are to be governed, and all fire bosses will observe the same:

First. Do not remain off of duty without giving foreman due notice, so that he can put a man in your place.

Second. On beginning your shift's work, your regular daily route will be: Commencing at mouth of slope, travel to face, and return from lower entry in slope to the upper entry in same, making a regular travel in all air courses, and examine all places, including abandoned as well as working places, in each entry, with Davy safety lamp, or such other improved lamp as may be in use at the time.

Third. If you find the brattice or canvas shot down or damaged, repair it at once, so as to conduct the air to the face of the workings as soon as possible, and report in every instance where canvas is shot down to the foreman.

Fourth. Report in writing all places where gas is found; also verbally to foreman.

Fifth. If air courses are obstructed in any way by water or rock, etc., report same in writing, and verbally to foreman, that he may remedy it at once.

Sixth. Where roof of air course is bad, and looks dangerous and should be timbered or taken down, report same daily in writing, and verbally to foreman.

Seventh. Do not allow any man to go into his place with naked light where standing gas is found or being generated freely. Give him a locked safety lamp and instruct him to use it instead of naked light until further advised by you. Any person that you find disobeying this rule report same to foreman at once, and he will be discharged from the employment of the company.

Eighth. If you should find a large quantity of gas at any time in the mine between shifts, report same at once to foreman and do not allow the men to go farther down the slope than lamp house, and the foreman will know from your report how to instruct further.

Ninth. Quantities of gas found in places on account of brattice or canvas shot down should always be removed by the fire boss, and not allow the men to enter the place until the gas is removed.

Tenth. Instruct men who are working with safety lamps to brush all gas from their places before firing shots.

Eleventh. Any fire found in the mine from shot firing, or otherwise, must be put out promptly, and call for assistance from any point if you are unable to extinguish it yourself.

Twelfth. Examine and clean all safety lamps thoroughly after every shift's use, and do not allow any defective lamps to be taken from the lamp house.

Thirteenth. Any lamps that are damaged by persons using them, or if they fail to return them at the expiration of each shift, report same to foreman and damages will be charged against them.

Fourteenth. Report all places to foreman where you think there is not a sufficient flow of air traveling to prevent the accumulation of gases.

Fifteenth. Travel the main return air-ways daily without fail.

Sixteenth. Put the danger mark (XX) at the entrance of all places that contain standing gas.

RULES GOVERNING THE CERRILLOS COAL RAILROAD COMPANY MINE FANS.

First. The fireman will attend to the fans when the engineers are off duty.

Second. The engineer when on duty will have full charge of fans and see that they are attended to.

Third. On commencing the shift's work, visit the fans and see whether they are in good order or not.

Fourth. If you find any of the fans in bad order, notify the master mechanic at once.

Fifth. Do not stop the fan for any slight adjustment while men are in the mine.

Sixth. If either fan should get out of order so that it is necessary to stop it, etc

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the trapdoor near the fan immediately after stopping the fan, and open trapdoor immediately when the fan is started up again.

Seventh. Notify the foreman before you stop either or both of the fans.

Eighth. Do not stop both fans at one time while men are in the mine unless you see that they will be totally destroyed by continuing to run them, and not then until you notify foreman to get men out of the mine.

Ninth. If a sudden breakdown should take place, or you should find one of the fans stopped, notify the foreman at once, then close the trapdoor, and notify the master mechanic.

Tenth. In case of breakdown of either of the fans, and master mechanic is not close at hand, the engineer and firemen must do everything that they can to get the fan in operation again as soon as possible.

Eleventh. Fans are to be kept speeded as per verbal instructions given to you from time to time by the master mechanic or superintendent.

Twelfth. Visit the fan every hour and notice if all the working parts are in good order.

Thirteenth. Notice the speed of the fan every thirty minutes.

Fourteenth. If anything occurs to the boilers or steam-pipe connections, or if a sufficient quantity of steam can not be kept up for both fans and hoist plant, stop hoisting till such time as you can recover and maintain the usual pressure of steam.

Names and addresses of superintendents or managers or pit bosses.

Name of mine.	Post-office.	Officer.
Beacon Hill	Gallup, N. Mex	T. A. Fabro, manager.
Sunshine	do	Hugh McGinn, superintendent; W. Weaver, general manager.
Canavan & Bailey	do	Stephen Canavan, manager.
Rocky Cliff	do	Do.
Otero	do	Alex. Bowie, general manager; John Steward, superintendent.
Crown Point	do	Hugh McGinn, superintendent; W. Weaver, general manager.
Catalpa	do	Do.
Gallup	do	Do.
W. A. Clark	do	W. L. Brotherton, superintendent.
Mulholland-Casna	do	Gus Mulholland, manager.
White Ash	Madrid, N. Mex	James Duggan, superintendent; C. M. Higginson, vice-president, Chicago, Ill.
Lucas	do	Do.
Cook & White	do	Do.
Blossburg	Raton, N. Mex	Jas. A. Wiggs, superintendent; Harry Whigham, general manager.
Smith mine No. 2	do	Henry Smith, manager.
Mesa	do	Thos. Griffiths, manager.
Carthage	San Antonio, N. Mex	Hilton & Luerra, managers.
Monero, Nos. 1, 2, and 3	Monero, N. Mex	J. H. Crist, manager.

OFFICE OF JOHN W. FLEMING,
U. S. COAL-MINE INSPECTOR FOR THE TERRITORY OF NEW MEXICO,
Silver City, N. Mex., August 20, 1898.

To the Honorable SECRETARY OF THE INTERIOR,
Washington, D. C.

SIR: In accordance with your request of the 13th day of July, 1898, I beg leave to make report of the steps taken by me to carry out the provisions of an act of Congress, approved March 3, 1891, entitled "An act for the protection of the lives of miners in the Territories."

The mining officials throughout the Territory have done everything which I have requested of them relative to the sanitary conditions of the miners and the ventilation of the mines. I have no reason to complain seriously of poor ventilation. In some instances I have found that the air was not properly distributed or not forced to the face of the working places, but upon my calling attention to the same it was at once remedied. It has been proven to me that it is the aim of the mine owners to fully comply with the requirements of the mining laws. The general conditions of the mines are improving rapidly. In mines where no second outlet had been driven the same has been done. I may add that all the mines that I have inspected have the second outlet. The roadways are kept sprinkled to avoid dust explosions, and safety lamps are used in all places where gas is known to generate, and the miners are supplied with sufficient props and timbers to secure their working places against all danger.

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The general condition of the mines is improving steadily and the number of mines in operation is 20; those not in operation, 8; new mines in the course of development and producing, 2.

The production of coal for the fiscal year ending June 30, 1898, is as follows: Gallup, Bernalillo County, 372,611 tons; Madrid, Santa Fe County, 248,000 tons; Raton and Blossburg, Colfax County, 213,972 tons; Monero, Rio Arriba County, 22,500 tons; Carthage, Socorro County, 1,500 tons; total number of tons reported to me, 858,583.

Total number of fatal accidents, 7, as follows:

Cause: By falls of rock, 3; by falls of coal, 2; by runaway car, 1; by being struck by a piece of coal from shot, 1.

Total number of nonfatal accidents, 14, from the following causes: From falls of rock, 8; by runaway cars, 2; by premature shot, 1; from miscellaneous causes, 3.

The total number of men employed in and about the coal mines of the Territory for the fiscal year, as reported to me as mine inspector, were 1,888, as follows: Miners, 1,485; boys, 30; day men, 373; being an increase of employes of 523, as against the number employed in the previous year.

RECOMMENDATIONS.

Deeming the present law governing the mining industry as inadequate, I beg leave to offer a few suggestions in the way of amendments thereto, as I have suggested and recommended in my previous reports.

First. That the owner or operator of each coal mine employing ten or more men should make, or cause to be made, an accurate map or plan of the workings of such coal mine on a scale not exceeding 100 feet to 1 inch, showing the bearings and distances of workings and the general inclinations of the strata or any material deflections in such workings, and the boundary lines of such coal mines, which shall be kept for the use of the inspector at the office of said mine in the county where such mine is located; and shall also furnish a true copy of such map or plan to the inspector of coal mines, to be filed in his office; and said owner or agent shall cause to be made, on or before the 10th day of January and July of every year, a statement showing the workings of the coal mine or mines. If the agent or owner of any coal mine shall neglect or refuse, or for any cause fail, for the period of one month after the time described, to furnish said map or plan as above required, or if the inspector should find or have reasons to believe the map or plan was inaccurate in any material part, that he be authorized to cause a correct map or plan of the actual workings of such coal mine to be made at the expense of the owner thereof.

Second. The owner or agent of any coal mine, whether shaft, slope, or drift, shall provide and maintain for every such mine an amount of ventilation not less than 150 cubic feet (where fire damp is known to exist) per minute per person employed in such mine, and also an amount of ventilation of not less than 500 cubic feet per minute for each mule or horse used in such mine, which shall be distributed throughout the mine in such a manner as to dilute and render harmless and expel the noxious and poisonous gases from each and every working place in the mine. Breakthroughs or air ways should be driven at least every 60 feet, or closer if deemed necessary by the inspector, and an air way or break-through be made at the face of each and every abandoned room or entry. All break-throughs, except those last named near the working face of the mine, shall be closed up and made air-tight by brattice, trapdoor, or otherwise, so that the current of air in circulation in the mine may sweep to the interior of the mine where the persons employed in such mine are at work.

Third. Within twenty-four hours after abandonment of any working face in the mine all tracks, ties, and other material, if any, should be taken out, and all entrances and approaches to that particular place should be bratticed up or filled in with "goaf", except openings for ingress and egress of air; and in these two openings, immediately in the openings and not in the room and working face, danger signals should be placed in such a manner that an intruder could not avoid seeing them.

Fourth. All mines to be provided with artificial means of ventilation necessary to provide a sufficient quantity of air, such as fanning or suction fans, exhaust steam furnaces, or other contrivances of such capacity and power as to produce and maintain an abundant supply of air; but in case a furnace shall be used for ventilation purposes it shall be built in such a manner as to prevent the communication of fire to any part of the works, by lining the upcast with any incombustible material for a sufficient distance up from said furnace. All mines generating fire damp shall be kept clear from standing gas, and every working place shall be carefully examined every morning with a safety lamp by a competent person or persons before any of the workmen are allowed to enter the mine, and the persons making such examinations shall mark on the face of the workings the day of the month, and report the condition of the mine at or near the pit top to the superintendent or pit boss; and in all the mines, whether they generate fire damp or not, the doors used in assist-

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ing or directing the ventilation of the mine shall be so hung and adjusted that they will shut up of their own accord and can not stand open. The owner or agent shall employ a practical and competent overseer, to be called a mining boss, who shall keep a careful watch over the ventilating apparatus and the air ways, traveling ways, pumps, timber, and drainage; also shall see that as the miners advance their excavations all loose coal, slate, and rock overhead are carefully secured against falling in on the traveling ways, and that sufficient props and caps of suitable length and size are furnished for the places where they ought to be used and placed in the working places of the miners. He should measure the ventilation at least three times per week at the inlet and outlet, and also near the face of all entries. A record on properly printed blanks should be kept for such measurements, and at the end of each week the mine inspector should be mailed a copy.

Fifth. The mining boss, or other competent person, should make daily inspections of ropes, chains, cages and other hoisting apparatus, guides and shaft timbers, and make a record of such daily inspection in a book kept in the office of such mine for that purpose. The mine boss should keep a daily record of any defect in the ventilating appliances and any standing gas that may be found in the mine, designating the entry and room in which the gas has been found. The record of the aforesaid inspection shall be kept open at all times for the inspection of the mine inspector.

Respectfully submitted.

JOHN W. FLEMING,
United States Mine Inspector for the Territory of New Mexico.

LAWS GOVERNING THE WORKINGS OF COAL MINES IN THE TERRITORIES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in each organized and unorganized Territory of the United States wherein are located coal mines the aggregate annual output of which shall be in excess of one thousand tons per annum, the President shall appoint a mine inspector, who shall hold office until his successor is appointed and qualified. Such inspector shall, before entering upon the discharge of his duties, give bond to the United States in the sum of two thousand dollars, conditioned for the faithful discharge of his duties.

SEC. 2. That no person shall be eligible for appointment as mine inspector under section one of this act who is not either a practical miner or mining engineer, and who has not been a resident for at least six months in the Territory for which he shall be appointed; and no person who shall act as land agent, manager, or agent of any mine, or as mining engineer, or be interested in operating any mine in such Territory, shall be at the same time an inspector under the provisions of th s act.

SEC. 3. That it shall be the duty of the mine inspector provided for in this act to make careful and thorough inspection of each coal mine operated in such Territory, and to report at least annually upon the condition of each coal mine in said Territory with reference to the appliances for safety of the miners, the number of air or ventilating shafts, the number of shafts or slopes for ingress or egress, the character and condition of the machinery for ventilating such mines, and the quantity of air supplied to the same. Such report shall be made to the governor of the Territory in which such mines are located, and a duplicate thereof forwarded to the Secretary of the Interior, and in case of an unorganized Territory directly to the Secretary of the Interior.

SEC. 4. That in case the said mine inspector shall report that any coal mine is not properly constructed or not furnished with reasonable and proper machinery and appliances for the safety of the miners and other employes, it shall be the duty of the governor of such organized Territory, it shall be the duty of the Secretary of the Interior, to give notice to the owners or managers of said coal mine that the said mine is unsafe, and notifying them in what particular the same is unsafe, and requiring them to furnish or provide such additional machinery, slopes, entries, means of escape, ventilation, or other appliances necessary for the safety of the miners and other employes within a period to be in said notice named, and if the same be not furnished as required in such notice, it shall be unlawful after the time fixed in such notice for the said owners or managers to operate said mine

SEC. 5. That in all coal mines of the Territories of the United States the owners or managers shall provide at least two shafts, slopes, or other outlets, separated by natural strata of not less than one hundred and fifty feet in breadth, by which shafts, slopes, or outlets distinct means of ingress and egress shall always be available to the persons employed in said mine. And in case of the failure of any coal mine to be so provided, it shall be the duty of the mine inspector to make report of

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such facts, and thereupon notice shall issue, as provided in section four of this act and with the same force and effect.

SEC. 6. That the owners or managers of every coal mine at a depth of one hundred feet or more shall provide an adequate amount of ventilation of not less than fifty-five cubic feet of pure air per second, or thirty-three hundred cubic feet per minute, for every fifty men at work in said mine, and in like proportion for a greater number, which air shall by proper appliances or machinery be forced through such mine to the face of each and every working place, so as to dilute and render harmless and expel therefrom the noxious or poisonous gases; and all workings shall be kept clear of standing gas.

SEC. 7. That any mine owner or manager who shall continue to operate a mine after failure to comply with the requirements of this act and after the expiration of the period named in the notice provided for in section four of this act, shall be deemed guilty of a misdemeanor, and shall be fined not to exceed five hundred dollars.

SEC. 8. That in no case shall a furnace shaft be used or for the purpose of this act be deemed an escape shaft.

SEC. 9. That escape shafts shall be constructed in compliance with the requirements of this act within six months from the date of the passage hereof, unless the time shall be extended by the mine inspector, and in no case shall said time be extended to exceed one year from the passage of this act.

SEC. 10. That a metal speaking-tube from the top to the bottom of the shaft or slope shall be provided in all cases, so that conversation may be carried on through the same.

SEC. 11. That an improved safety-catch shall be provided and sufficient cover overhead on every carriage used in lowering or hoisting persons. And the mine inspector shall examine and pass upon the adequacy and safety of all such hoisting apparatus.

SEC. 12 That no child under twelve years of age shall be employed in the underground workings of any mine, and no father or other person shall misrepresent the age of anybody so employed. Any person guilty of violating the provisions of this section shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not to exceed one hundred dollars.

SEC. 13. That only experienced and competent and sober men shall be placed in charge of hoisting apparatus or engines, and the maximum number of persons who may ascend or descend upon any cage or hoisting apparatus shall be determined by the mine inspector.

SEC. 14. That it shall be lawful for any inspector to enter and inspect any coal mine in his district and the working machinery belonging thereto, at all reasonable times, but so as not to impede or obstruct the working of the mine; and to make inquiry into the state of the mine, works, and machinery, and the ventilation and mode of lighting the same, and into all matters and things connected with or relating to the safety of the persons employed in or about the same, and especially to make inquiry whether the provisions of this act are complied with; and the owner or agent is hereby required to furnish means necessary for such entry, inspection, examination, and inquiry, of which the said inspector shall make an entry in the record in his office, noting the time and material circumstances of the inspection.

SEC. 15. That in all cases of fatal accident a full report thereof shall be made by the mine owner or manager to the mine inspector, said report to be in writing and made within ten days after such death shall have occurred.

SEC. 16. That as a cumulative remedy, in case of the failure of any owner or manager of any mine to comply with the requirements contained in the notice of the governor of such Territory or the Secretary of the Interior, given in pursuance of this act, any court of competent jurisdiction, or the judge of such court in vacation, may, on the application of the mine inspector in the name of the United States and supported by the recommendation of the governor of said Territory or of the Secretary of the Interior, issue an injunction restraining the further operation of said mine until such requirements are complied with, and in order to obtain such injunction no bond shall be required.

SEC. 17. That wherever the term "owner or manager" is used in this act the same shall include lessees or other persons controlling the operation of any mine, and in case of the violation of the provisions of this act by any corporation, the managing officers and superintendents, and other managing agents of such corporation, shall be personally liable and shall be punished as provided in act for owners and managers.

SEC. 18. That the mine inspectors provided for in this act shall each receive a salary of two thousand dollars per annum, and their actual traveling expenses when engaged in their duties.

SEC. 19. That whenever any organized Territory shall make or has made provision by law for the safe operation of mines within such Territory, and the governor

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such Territory shall certify said fact with a copy of said law to the Secretary of the Interior, then and thereafter the provisions of this act shall no longer be in force in such organized Territory, but in lieu thereof the statute of such Territory shall be operative.

Approved, March 3, 1891.

SHEEP.

That "the hoof of the sheep is golden" has been demonstrated conclusively in New Mexico. Not even Australia, renowned the world over as the sheep growers' paradise, can surpass New Mexico in its advantages as an ideal sheep-breeding and woolgrowing section. The master hand of nature lavishly supplied our Territory with everything requisite for the successful pursuit of the sheep and wool industry. Nature endowed her with a peerless climate, neither hot nor cold, yet overflowing with sunshine from January to December, producing an atmosphere pure, ozone laden, and invigorating.

Her grazing lands extend from the plains and mesas to the top of the mountains, 10,000 feet high, and bountifully covered with nature's choicest nourishment—grama grass—which retains to a surprising degree its succulence and nutrition, even when only cured by wind and weather, where it grew, and with no assistance from mankind.

New Mexico's natural adaptability to sheep raising and woolgrowing was recognized by the Spaniards when they settled in this section about three hundred years ago, and they introduced large numbers of Merino sheep, which soon became the principal support of the people, furnishing them with food and raiment. Since that time this industry has occupied a prominent position in the Territory, and it is to-day, as it has been for many years past, the most important and profitable in New Mexico.

At this time there are owned within the borders of the Territory over 4,000,000 head of sheep, including the lambs grown this year, and with the exception of one State possessing many similar natural advantages, our Territory towers above all other States and Territories in the number of sheep owned.

The original stock was of the Spanish Merino type of sheep, and from lack of fine-bred rams to keep up and improve the strain they gradually deteriorated in character, until they became a class unto themselves, displaying more of the characteristics of wild than of domestic, animals. This trait developed in these sheep an ability to hunt for their food, and enabled them to subsist upon scanty herbage and to live without water for many days whenever conditions demanded or necessitated such modes of living. To-day, though improved by the best blooded stock to be found, they still possess these desirable characteristics.

The ewes make excellent mothers, caring for their lambs in a manner unequaled by any other breed of sheep, and fearlessly defending them against attack by carnivorous wild animals. Their fecundity is also remarkable, and there is always a high percentage of lambs born, running up, in some flocks, over 100 per cent. Possessing such qualities, the increase and growth of the flocks is very rapid.

With their inherited and acquired knowledge of the sheep business, it would be difficult to find in any other section of the country a class of growers who can excel the New Mexican sheep men in the intelligent and economical management of their herds.

In the improvement of their flocks they have experimented with different breeds, and the results have convinced our best sheepmen that, for the conditions prevailing in New Mexico, the American Merino, of

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the Delaine or Rambouillet types, is superior to all other breeds tried, and for the purpose of raising the standard of their sheep they have imported many fine bred rams from Vermont, Pennsylvania, Ohio, and Michigan, for some of which as high as $100 per head was paid.

The fine types are peculiarly suited to New Mexico, not simply because they are wool and mutton sheep, but for the reason that sheep in our Territory are grazed upon open ranges, and it is therefore essential that the sheep should possess the quality of herding together, and this is a leading trait of the Merino. Some of the long wooled mutton breeds have been tried, but as these sheep will not stay "bunched" while feeding it is very difficult to herd on the open ranges, and their decided tendency to wander off singly demands unceasing vigilance as well as hard and tiresome work on the part of the herders to hold them together, while the danger of loss from this cause is always serious, and these sheep are therefore not well suited for open-range grazing.

The Rambouillets, however, being of pure Merino descent, have inherited the flocking qualities of their ancestors, and they are a desirable class for range work. They are free from wrinkles, the wool produced is of the finest quality, and they make excellent sheep for mutton purposes.

We know not whether it is due to the climate, to the grama grass, or to the breeding, yet the fact remains that the mutton from New Mexican sheep possesses a sweetness, tenderness, and delicacy of flavor that puts them easily in the front rank as choice mutton sheep. These qualities are so well known that "feeders" prefer them to any others, and the demand for them for feeding pens is so great that the growers are only partially able to supply it. Nearly a million head of sheep are annually taken to Colorado, Nebraska, Kansas, Missouri, and Illinois to be fattened for market. Fort Collins, Colo., receives large numbers of them, and the high price the feeders obtain for their New Mexican sheep demonstrates their superiority as mutton producers.

The sheep make splendid feeders, as they will eagerly and greedily feed upon alfalfa, oats, corn, wheat screenings, etc., and take on weight very rapidly. Their faculty for adapting themselves to existing conditions makes them very desirable animals for the feeders, as they are as much at home in the feed pens as they are upon the ranges. Sheep are also being fattened around Eddy, N. Mex., upon the sugar-beet pulp, and the sugar factory there is now able to advantageously dispose of what was formerly a waste product. Results from pulp feeding have been very satisfactory, particularly in the case of old ewes. The pulp furnishes them with an abundant supply of rich milk, and they are thus enabled to raise strong, well-developed lambs.

No business offers more profitable returns than does that of sheep-raising and woolgrowing in the Territory of New Mexico at the present time.

The cost of running the sheep for a year is about 30 cents per head, which covers the expense of herding, lambing, shearing, dipping, taxes, etc.

The cost of shearing amounts to 2½ to 4 cents per head, according to the class of sheep shorn.

The flocks are usually run in bands of 3,000 to 5,000. The people of New Mexico are unsurpassed in the management of sheep herds. It is no unusual thing for them to take sheep on shares, agreeing to return double the number of young and healthy ewes at the end of five years, with a considerable amount of wool annually; and often after the five years the party, on repaying, has double or treble the

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original number left for himself. The flocks require three men, or two men and a boy, and two or three dogs, and when the same man has three or more flocks another man of experience as overseer. Each flock also has a donkey and camp equipage, which with the rations are carried on the donkey. The sheep are grazed from place to place within the range. The men and dogs constantly remain with the sheep during the whole year.

A few years ago sheep could be bought for 75 cents per head, and even at that price there were few buyers. To-day ewes are selling freely from $3 to $4 per head, yearlings (wethers) $2.50 to $2.75; two years and up (wethers), $3 to $3.25, and six-months-old lambs at from $ to $2.25 per head.

One of the prominent sheepmen of New Mexico, who started in the business about twenty years ago with practically no capital, has just disposed of his business, and finds himself worth over $100,000, notwithstanding the fact that he, in common with the other sheepmen, lost money for several years during the agitation for and life of the obnoxious Wilson bill.

The following statement will briefly show about what can be done in the sheep and wool industry in the Territory of New Mexico:

This is the way it works:

4,000 ewes, at $3 per head	$12,000	
Expenses for one year, say 50 cents per head	2,000	
Total cost		$14,000

At the end of one year you have:

3,800 ewes (5 per cent loss allowed), at $3	$11,400	
21,000 pounds of wool, at 12 cents	2,520	
3,100 lambs, at $2	6,200	
		20,120
Profit		6,120

Fifty per cent on the original outlay is a handsome return from any enterprise, and we believe we do not err when we reiterate that the people engaged in sheep husbandry in New Mexico are following the most profitable business in the West to-day; and as long as a protective tariff guards their interests the prospects and outlook for the future are certainly very bright for the sheep men, and the prosperity of the Territory is in a very large measure commensurate with the success enjoyed by those who are devoting their capital, brains, and energies to this important industry.

WOOL.

The wool clip of the Territory will amount to fully 15,000,000 pounds for this year. A few years ago the average weight per fleece was very low, but now, owing to improved breeding, it will amount to a little over 5 pounds per head. The wool grown in New Mexico is of a diversified character, scaling from the finest Delaine-Merino to the coarsest carpet. The improvement in the grade of the wool has been coincident with the improvement in the sheep, and the growers are still exerting themselves in the laudable ambition of bringing their flocks and wool up to a still higher standard of quality. Many years are consumed in breeding the coarse-wooled stock up to the desired Merino plane, and so to day, while clips are shorn that will compare favorably with any in the United States, the majority of them are not uniform in grade, but will contain fleeces producing sorts running from fine to carpet. The lambs of each succeeding year produce a finer grade of

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wool, and in time, if the growers continue to use fine Merino rams, the wool clip of New Mexico will be composed of fleeces uniform in grade and of choice character.

There is an ever-increasing scarcity of fine wool in the world, due to the crossing of the fine wooled flocks with the large-framed, coarse, long-wooled breeds. The tendency to breed exclusively for a large carcass has amounted almost to a craze all over the globe, from which the New Mexican growers have been comparatively free. They have again displayed their intelligence by directing their efforts solely to the production of fine-wooled mutton sheep, and the certain advance of fine wools to a high point will amply reward them for their foresight and labors.

The following tables, furnished by one of the large wool-scouring plants situated at Las Vegas, indicate the diversity in the wool clips grown in the Territory:

	Per cent.
A clip of 40,000 pounds of grease wool yielded:	
Scoured fine wool	65
Scoured fine medium	35
A clip of 90,000 grease pounds yielded:	
Scoured fine and fine medium	97
Quarter-blood	2
Blanket	1
A clip of 77,000 grease pounds yielded:	
Scoured fine and fine medium	90
Quarter-blood	9
Blanket	1
A clip of 31,000 grease pounds yielded:	
Scoured fine medium	2
Three-eighths	59
Quarter-blood	17
Blanket	18
Carpet	4
A clip of 20,000 grease pounds yielded:	
Scoured three-eighths	43
Quarter-blood	31
Blanket	16
Carpet	10

There are many clips that will show a much greater percentage of the low sorts (blanket and carpet) than is indicated in the tables quoted above.

The advance in the price of wool has kept step with that of the sheep. In 1896, when sheep were only worth 75 cents per head, the price of wool touched its lowest point. Eastern commission houses even refused to make any advance on grease wool, and owners were offered 3 to 5 cents per pound for the fine clips. To-day these wools are worth 11½ to 14 cents per pound, and the importing price of wool has not yet been reached by 2 to 3 cents per pound. Light shrinking wools sold as high as 17½ cents last fall; all of which tends to prove that a protective tariff on wool is neither a myth nor a fallacy, but is essential and beneficial to the wool industry of New Mexico, as elsewhere in the United States.

The production of such a vast quantity of wool has brought within our borders another important industry, the business of scouring wool, as well as of sorting it and otherwise preparing it for the manufacturers' use. Three large plants have been erected at Las Vegas. There is also one located at Albuquerque. There is in addition to these a scouring plant at Trinidad, Colo., across the New Mexican line, which handles large quantities of wool grown in northern and northeastern New Mexico. The town of Eddy is at present contemplating the erection of a wool scouring mill, and if the water proves suitable for this business they hope to have it running by next wool season.

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These scouring mills have been the prominent factor in securing for the growers full prices for their clips. The benefits they confer upon the sheep men are numerous. Their presence and anxiety to secure wool has developed a competition among buyers that has reacted to the growers' benefit. The scouring of wool at home results in a big saving in freight charges, as all the grease and sand carried by the wool is eliminated, and transportation charges are only paid on clean wool. They are a school for the growers, as they teach them the shrinkage of the wool and the percentage of the various sorts taken from it; and, as all wool is bought and sold on a scoured basis, it is very necessary that they should possess this information, as it enables them to dispose of their product intelligently and to good advantage. If wool is consigned to an Eastern commission house to be sold the charges are less for handling scoured wool than for grease wool, the growers have more money to spend at home, and their support of the scouring mills keeps employed in New Mexico much capital and many hands.

The benefits of scouring mills to a community are fully illustrated in the case of Las Vegas, which is to day the best wool market in the Southwest, and wool is shipped to that point from the most distant parts of the Territory, the growers being attracted there by its excellent outlet for wool.

If the grower sells his wool to an Eastern buyer in the grease he has to pay the freight as well as the charge for scouring the wool, as he well knows, and if he can save the money paid for hauling the grease and dirt in his wool it is certainly to his interest to do so. It is also better for the Territory to have this work done here, as it encourages an important industry and adds to the wealth of New Mexico.

That the conversion of the wool just as it comes from the sheep's back into the condition required by the manufacturers has been remunerative to the growers is demonstrated by the following letters, which were received, with others of similar import, by one of the leading scouring mills at Las Vegas:

PUERTO DE LUNA, N. MEX., *January 17, 1898.*

——— ———.

In reply to your letter of the 10th instant, I have to say that I want you to scour my wool, as you have done for many years

I have learned by experience that the reputation of your company in the wool market of the East is such that wool sorted and scoured by it sells for the highest market price; and in regard to my wool, when you scour it, and I see the market quotations for scoured wools, I know exactly what it is worth, and I believe the owners of fine wool can realize more by scouring than selling in the grease. For instance, two years ago, when you scoured it, I realized, after all expenses had been paid, $1,668.48 over the highest price I was offered for it in the grease.

I often hear it asserted that in New Mexico and Arizona we can not raise such wool as is produced in Montana and Northern States, and it may be true; but, nevertheless, I have received for every clip you have scoured the past six years the same price, and I think I owe something to your company for the thorough manner it was sorted, scoured, and put up, and I am going to stay with you.

Yours truly, J. G. CLANCEY.

P. S.—I hope to have over 100,000 pounds this coming clip.

CHILILI, N. MEX., *January 17, 1898.*

——— ———.

We are very well satisfied with the manner in which you handled our clip last year and the price you got for us. It is our intention to place this spring's clip, which will be in the neighborhood of 200,000 pounds, in your hands again, as we believe all fine wools should be handled through a scouring mill, as there is a big saving in freight and in the commission charged for selling the wool. We are convinced that we can get more money from our clip in this manner than if it is handled or disposed of in any other way.

Yours truly, MCINTOSH & MCGILLIVRAY.

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The sheep business of New Mexico has also resulted in the establishment of another enterprise at home, viz, that of wool pulling and tanning. There are located at Las Vegas two wool pulling plants, one of which is also engaged in the tanning of leather. The processes through which a sheep pelt goes from the time it is taken off the carcass until it is converted into leather are many and interesting. When the pelts are received by the puller they are soaked in tanks filled with clear soft water. When the skin is thoroughly softened the water is drained off, usually in hydro-extractors. If what is known as the sweating process is used, the pelts are then suspended from tenter hooks in closed rooms, called the sweat houses. Steam is introduced, and the chemical action produced by the heat upon the skin causes the wool to be easily removed from the skin after having been sweated for about forty-eight hours. The use of depilatories is largely supplanting the sweating method. In this case the flesh side of the pelt is painted with a solution of the depilatory. The pelt is folded and laid away for five to twelve hours, according to the season of the year and strength of solution, after which the wool can be pulled from the skin with great ease, the depilatory having destroyed or eaten the roots of the wool fibers. As the pullers remove the wool they sort it into the different classes belonging to pulled wool, which are technically known as extra, fine super, A super, B super, and C super.

The pelt from which the wool has been taken is now termed the "slat," and it is then put through the processes of liming, beaming, bating, or drenching. At this stage, if the puller is also a tanner, the slat goes to the tanning department, whence it finally emerges as leather. There are about twenty different processes for tanning slats, the four principal ones being the chrome, the oil, the bark, and the alum. If the puller does not desire to tan the slats he proceeds to pickle them, in which state they can be kept for a long period, or they may be sold to those who tan the slats only and do not engage in the preliminary work of pulling. The work of pickling is performed in order to preserve the slats in good condition for tanning, when they are not tanned immediately after the bating process.

The location of these plants within the Territory supplies the growers with a splendid home market, just as the wool-scouring mills furnish him with an unsurpassed outlet for his wool clip.

New Mexican pelts have an enviable reputation for their leather-making qualities. Eastern tanners prefer them to all others on account of their fineness of grain and toughness, and they are largely used in the production of imitation morocco and other fine leathers, as well as for glove stock, for which they are eminently suited. If the butchers and herders will exercise proper care in removing the pelt from the carcass and in curing it afterwards they can obtain fancy prices for them. Pullers and tanners have complained at times that excellent skins have been ruined for leather purposes by reason of careless skinning and handling in the primal stages, an objection that should and can be easily remedied by the exercise of intelligence and care on the part of those who skin the animals and prepare the pelts for shipment to the pullers.

SHEEP SANITARY BOARD.

LAS VEGAS, N. MEX., *July 25, 1898.*

DEAR SIR: I beg leave to submit to you my report, as secretary of the sheep sanitary board of New Mexico, of the business transacted by said board during the year ending June 30, 1898.

The board organized on the 3d day of June, A. D. 1897, by electing Hon. Solomon Luna president, J. M. Gonzales vice-president, and Antonio Lucero secretary.

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This being the first year of the existence of the sheep sanitary board of New Mexico, much of its time at the early part of its organization was consumed in adopting rules and regulations for its government, and appointing sheep inspectors, as provided by law, and doing other work necessary and prerequisite to put into execution the business of the new law.

The first work by the board was the preparation and distribution by its secretary of a pamphlet containing a copy of the new law and a circular letter addressed to the sheep owners of New Mexico, calling their attention to the new law, and soliciting their co-operation for its enforcement, copies of which I herewith inclose you.

After the publication and distribution of this pamphlet, the board drafted and adopted a set of rules and regulations, copies of which are also herewith inclosed.

At that same meeting at which the rules and regulations were adopted, the board appointed sheep inspectors for all the counties of the Territory, as provided by law, and gave them instructions to proceed under the law and the rules and regulations of the board.

When the board organized, it found itself without a penny in the treasury, and with very inadequate means to raise funds to defray the expenses which necessarily would have to be incurred to carry out the provisions of the law, so that the first problem to solve was how to raise money for that purpose.

The law provides 1½ mills to be levied on each head of sheep and goats in the Territory, and an additional tax of 5 cents per head on sheep brought in from without the Territory, as an inspection fee, which, when collected, is to be used to defray the expenses of the board.

After mature consideration, the board came to the conclusion that the money thus raised would be inadequate to meet all expenses necessarily incurred in carrying out the provisions of the law; therefore a tax of 1 cent per head, as an inspection fee, to be charged on all sheep inspected to be shipped out of the Territory was agreed upon.

I have kept a record of all sheep brought into the Territory, as well as of all sheep leaving the Territory, which record shows the following result:

Sheep brought into the Territory from other States and Territories from June 3, 1897 to June 30, 1898	95,548
Sheep going out of the Territory, and inspected by the inspectors at the stock yards during same period	560,984
Revenue collected from sheep brought into the Territory	$4,266.00
Money collected from inspection of sheep leaving Territory	5,609.84
Total collected	9,875.84
Of this amount we have expended in paying inspectors, salaries, mileage, and attendance of members of board, and other miscellaneous expenses.	5,356.92
Balance on hand	4,518.92

As we were not certain when we started that we would have enough money in the treasury to defray all the expenses of the board, the inspectors were given orders to inspect only such sheep as were reported to them as being scabby, or as they might have personal knowledge were infected, and for that reason my books do not show a complete record of all sheep now ranging within our Territory. However, basing my opinion on the number of sheep returned for taxation in the Territory for 1897, which was 1,800,000, and on the number of sheep which were inspected by our inspectors, which was 1,200,000 according to the reports which I have on hand, I estimate the total number of sheep in our Territory to be about 4,500,000.

I find from my records that of the owners of sheep in the Territory of New Mexico, 85 per cent are Mexicans, and, aside from 50 owners of this number, such as the Pereas, Lunas, Oteros, and other large owners, that the rest own on an average of about 800 head apiece.

This year, having some money in the treasury to defray expenses, and being better prepared in other respects to do the work, we expect to have the inspectors visit each and every flock in their respective counties, so as to have by the end of the year a complete list of all the sheep men in New Mexico, and the number of sheep owned by each individual. Besides this we hope to have by that time almost eradicated the disease called the "scab," which heretofore has been such a drawback to the industry in New Mexico.

During the short time we have been in existence, while we have not been able to entirely cure the scab, still we have accomplished one good result, which is to make the people realize the importance of such a law on our statute books, and I am glad to say that in this work we have had the co-operation of most all the sheep men of the Territory.

I find that in the past all the sheep men of New Mexico have been in the habit of

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dipping their flocks every year; but the reason why the scab has not been stamped out is because a very small percentage have used dips properly. For that reason the board prescribed the mode of using the different "dips," adopting rules to that effect, and issued orders to the inspectors to supervise as far as practicable the dipping of such flocks as were badly infected with disease.

I find that the law regulating the sheep sanitary board is very defective as it now exists, but care not to make any suggestions at the present time, as I intend to address myself on that point to you later on, in time for you to embody it in your message to the next legislature.

Very respectfully,

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Members of the sheep sanitary board of New Mexico are as follows:
Solomon Luna, president, Los Lunas, N. Mex.; Jose M. Gonzales, vice-president, Baca, N. Mex.; W. S. Prager, Roswell, N. Mex.; Antonio Lucero, secretary of board, Las Vegas, N. Mex.

CATTLE.

Hon. M. A. OTERO,
Governor, Santa Fe, N. Mex.

DEAR SIR: I have the honor herewith to transmit the report of the cattle sanitary board of New Mexico for 1897, and incidentally to call attention to the importance of this industry to the material interests of New Mexico. Since 1880, and up to 1897, the prices for their product have been so discouraging that more than half of those engaged in that pursuit have gone voluntarily or have been forced out of the business, and their holdings have disappeared from the range; but notwithstanding all this no other interest in this Territory can to-day show anything to compare with it in its material results.

Before the passage of the law of 1891, requiring the inspection and release of all cattle taken out of the Territory, no records had been kept showing the numbers or the classes of the cattle sent out, and it is not accurately known how many of our native-grown cattle were marketed; but from the records kept and now on file in this office since the above-mentioned law went into effect there must have been, on a conservative estimate, not less than from 2,750,000 to 3,000,000 head sold and delivered during the boom days of the 80's, and that at the prices prevailing during that period must have produced for their owners not less than $35,000,000.

During the years from and including 1891 and 1896, the records show that 1,340,960 were disposed of—77,353 head of them being slaughtered within the Territory—which, estimated at $10 per head, a very low figure, for they largely consisted of grown steers, footed up to nearly $13,500,000. During 1897, 244,495 were marketed outside and 11,419 were slaughtered within the Territory which, at current values, show a return of not less than $6,250,000.

The following table will show the movement of cattle in each year since the law providing for inspection went into effect:

Year.	Shipped and driven.	Slaughtered.
1891	189,203	14,612
1892	235,019	14,739
1893	191,064	10,503
1894	196,295	14,284
1895	210,295	11,820
1896	241,726	11,400
1897	244,495	11,419
Total	1,508,097	88,777

With the exception of a scarcity of surface water in a few localities the range is in fine condition and cattle are wintering well. The season is now so far advanced that no destructive storms are likely to occur before spring opens.

One very serious danger, however, now threatens the live-stock interests of the Territory. During the hard times lately experienced owners of both cattle and sheep have relaxed their efforts to destroy wolves and they have increased to such an extent that their ravages are a serious loss to stockmen, and consequently to the material interests of the range in our Territory. There is an urgent necessity that some measures be taken looking to concert of action by all the counties for their

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destruction. Such efforts as have heretofore been made have only resulted in driving them from one locality to another, without affording much relief to any, and it is only fair that the two greatest interests and sources of revenue to the Territory should have adequate protection.

Since the laws of 1893 and 1895, authorizing the cattle sanitary board to take possession of and sell unclaimed and unlawfully handled cattle, went into effect, 1,656 head of such have been sold, the proceeds amounting in the aggregate to $24,500.44; and in every case where their ownership could be established by the records in this office the money collected by the board has been sent to their owners. Those of the brands that are not of record or were otherwise unknown have been placed on the stray list and will be paid for on identification.

The scarcity of cattle throughout the Union is just beginning to be felt, and as there is also a shortage of sheep it is inevitable that much higher prices for both must prevail for some years to come. There is good reason to believe that well graded cows will sell for $35 per head before this year is ended, and that they will reach $50 per head in the near future.

The board present their financial statement to December 31, 1897, together with the names and addresses of the inspectors now employed.

All of which is respectfully submitted.

W. H. JACK, *President.*
J. A. LA RUE, *Secretary.*

LAS VEGAS, N. MEX., *June 20, 1898.*

CATTLE SANITARY BOARD OF NEW MEXICO.

Financial statement December 31, 1897.

LIABILITIES.

Cash balance on hand January 1, 1897		$2,860.69
Cash received for inspections		8,404.53
Cash received for strays		5,512.65
Cash received for tax as per treasurer's statement		1,924.93
		18,702.80

EXPENDITURES.

Paid for—		
Inspections	$8,800.98	
Strays	4,207.67	
Expense of members	792.85	
Secretary	1,000.00	
Attorney's fees	500.00	
Advertising, stationery, and postage	503.21	
General and office expenses	393.60	
Cash balance on hand December 31, 1897	2,504.49	
		18,702.80

I am happy to be able to report that the outlook for the stock-growing interests of New Mexico was never so encouraging as at present. Abundant and timely rains have put the ranges in the finest possible condition, and the demand for all their products by far outruns the supply at much better prices than have for a long time if ever before been realized.

The shortage of both cattle and sheep throughout the Union is now well understood, and that the prices now prevailing, and even much higher ones in the near future, will be continued for a long time to come must be evident to all who give the matter the slightest consideration. For intending investors in this industry no other section of the range country can offer anything like the inducements here to be found.

The nutritious grama grass, indigenous to this altitude, here reaches its fullest development, the nature of the soil, containing as one of its elements a large percentage of gypsum, being especially favorable and in fact the cause of its luxuriant growth. Its habit of seeding late in the season and curing up into hay on the ground furnishes an abundant supply of feed all through the winters (which are mild and open) until the grass comes again in the spring, nature thus furnishing without cost that food supply which must be provided with much labor and at great expense

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to carry stock through the winter in more rigorous climes. So well nourished are both cattle and sheep on this feed alone that fat beef and mutton of unexceptionable flavor can be found on the range during any month of the year; it is only in a late and backward spring that the feeding of old and weak "coming-in cows and ewes" is required, but progressive stock men generally make provision in such cases with profit to themselves.

An immense plateau, known as the "Llano Estacado," or "Staked Plains," perennially clothed with the most luxuriant growth of the before-mentioned grass, having a mild and equable climate, has heretofore, on account of the absence of surface water, been considered unavailable for stock-raising purposes. But the experience of the last few years has shown that an abundant supply of the best and purest water at no great depth underlies the whole region; that both flocks and herds, away from the insect pests that at some seasons are troublesome in the valleys and along the streams, find perfect health, thrive wonderfully, and that their increase is almost phenomenal. This section is now practically unoccupied, but the possibilities for successful stock raising there are almost unlimited. It is also a fact that both cattle and sheep raised on these plains have a special flavor of their own, imparted by the herbage on which they feed, and which still pertains to their product when finished for market on grain in the corn-growing section of the Mississippi region, as will be shown by an incident related to the writer by an English gentleman, himself largely interested in cattle for a number of years here in the West. During his recent visit to his home, at a dinner with a large party of his countrymen, a joint of beef on the table, of exceptionally fine quality, came under discussion as to its origin, it being stoutly maintained by nearly all the guests that the joint in question was of English growth; that, in fact, beef of that quality and flavor could be produced nowhere else. He, being in the minority, but believing that he recognized a flavor to which he had become accustomed on the ranges here, took the pains to trace that particular cut to its origin, and found, through the London butcher who sold the meat, that it was American beef, and, upon further investigation through him to the consignee who had had the animal slaughtered at Deptford and had sent the carcass forward to the London butcher, that it came from a high-grade steer of a very well-known New Mexican brand that had been fattened in Kansas and shipped from Kansas City to Liverpool direct.

That this special flavor so highly prized by that discriminating nation of beef eaters should be retained after being fattened and shipped across the Atlantic shows that what has always been maintained for the grama grass, as to its value, is true, not only in producing the carcass, but also for the flavor of the product when finished by intense feeding on grain, and must inevitably before long become a factor in the selection of cattle to be finished by feeders for the foreign market.

In addition to this nutritious forage which in New Mexico nature provides, the use of alfalfa for carrying steers through the winter and preparing them to be quickly finished on grain for the markets is being extensively prosecuted with very satisfactory results. About 7,000 head were so handled in the Mora Valley during the last winter, very nearly all of them going into the hands of Kansas feeders in the early spring at strong prices. It is claimed that with the start given them with the alfalfa they can be finished for market in about six weeks of high feeding on grain, thus making a great saving not alone in the amount of grain used but in the interest charges on capital invested; and that this means a great deal to the cattle interests of the whole of New Mexico goes without saying.

As the alfalfa crop returns on irrigated land a yield of from 3½ to 6 tons during the season, and in addition furnishes during the fall and spring a much-valued pasture that cattle can be driven to and fed on the same ground on which it is grown, saving the loss in handling and the cost of transportation, the value of the manure returning to the soil, making a market for all that can be produced; that both successful farming and stock raising along this line to an unthought-of extent is easily possible, opens another line of profit to both. Alfalfa feeding has also been carried on to a considerable extent in the Pecos Valley from Roswell to Eddy, at which latter place, mixed with the by-products of the beet-sugar factory, it has been fed to both cattle and sheep and, as reported, with success.

The experience of the tyros who during the boom days of the 80's turned loose on the range thousands of cattle, without any knowledge of the business or thought of its capacities for grass, and more particularly water, believing that the mere possession of cattle in their brands was an earnest of fortune to come, and which for these visionary investors ended as it only could, in disaster to themselves, also to their neighbors—anything of this sort, it is safe to say in the light of that experience, will not be repeated.

It has been known to some, but only a few have realized, that since the event just spoken of the numbers of cattle throughout the entire Union were greatly diminished. It is only a few years ago, and particularly within the knowledge of the

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writer, that New Mexican wethers were practically unsalable, but the shortened supply and the advanced price of beef led to the feeding of sheep as a meat supply, which, owing to the superior feeding qualities of New Mexico sheep and the extraordinary quality of the mutton so produced, originating from the same cause as that claimed for New Mexico cattle, that is, the herbage on which they feed, has already created a demand by far exceeding the supply, and for which within a short time prices before unheard of were paid; so that New Mexico, instead of having as heretofore an indifferent market for her wool, has now one greater than can be supplied for her mutton, and that the production of both cattle and sheep on her practically free pastures can be twenty times increased without overloading the range is also a fact; for, as before stated, water, the chief factor to be looked after in these industries, can be found in sufficient quantities in a vast unoccupied region where its existence was not believed in or even suspected. The work of the land court, too, in adjusting the title to enormous tracts of fine pasture lands that have heretofore been closed to the public by grant claimants will soon be utilized and stocked with—what is, without doubt, New Mexico's chiefest reliance and most valuable production—cattle and sheep.

Not only are the maturing grounds of Montana, Idaho, and the Dakotas ready customers for our young steer cattle, but the corn-growing States on our eastern border furnish a market with an ever-increasing demand for all range products to by feeding concentrate their farm crops so that they may be marketed at remunerative prices. Though the cattle holdings have been greatly reduced during the recent period of depression, the hard times having been very severely felt by cattlemen, the increase of the last few years has gone a long way to repair the deficiencies in numbers, and through the intelligent interest taken by those who have gone through the struggle to improve the grade, their product is much more desirable and sought for than ever. The number of cattle on the ranges is again increasing, the calf crops for the last three years having been very good and nearly all saved. The increased demand and the stimulation of better prices have encouraged their owners to take better care of them, and the business now seems to be looked after with something like the old-time zeal. During the current year many thousands of cattle from neighboring States and Territories and the Republic of Mexico have been brought into this Territory to secure its advantages of pasturage and climate and freedom from insect pests and contagious or infectious diseases, none of which exist in this altitude.

From data accessible to this office, there were in New Mexico in 1897 about 800,000 head of neat cattle. Those brought in, together with the calf crop of this year, will increase the holdings to over 1,000,000, all of which, being in the hands of experienced cattlemen, will soon show the influence of fine pasture and improvements in grade.

During the year ending June 30, 1898, there were marketed in round numbers 200,000 native New Mexico cattle, producing at current values about $6,000,000. Since April the movement of cattle to market has been very much retarded in consequence of the war and the conservatism of the banks, who declined to furnish expected and, in many cases, promised funds to enable them to be handled, as well as in a large measure the firm belief of their owners in the increasing value of their property. From January 1 to June 30, this year, this amounted to 60,000 head less than the number that were handled during the same period of 1897, but from the signs of the times now visible all fit cattle will be disposed of before the close of 1898.

I submit a few extracts from the reports of inspectors in different parts of the Territory, giving the views of practical cow men there on the ground.

From San Juan County: "Calf crop about 90 per cent; grade very much improved; owners are taking extra good care of their stock, which have about doubled in numbers during the last two years."

Mora, Colfax, and Union counties: "Calf crop good; cattle in fine condition, and feed everywhere."

Socorro, Sierra, Donna Ana, and Grant counties: "Abundant rains and feed, all that could be asked for. Calf crop for 1898 at least 70 per cent, and grade very much improved."

San Miguel, Gaudaloupe, and Taos counties: "Everything as good as has ever been known as to the range conditions, calf crop, and the growth of young stock."

Lincoln and Eddy counties: "Range was never better; everything fat; calf crop immense."

Chaves County: "Cattle and range in fine shape; calf crop above the average and well graded, and practically no loss; market acute and strong; greatest demands for good grades, but all classes sell at strong prices. About 150,000 head in my district."

Now that peace has come again and the corn crop assured, stockmen in this Terri-

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tory have reason to feel that prosperity is near at hand; that the strain under which they have labored for so long is passing away, and their experience has taught them that under all circumstances well-cared for and well-graded stock can always find a profitable market.

Respectfully, &c.,

J. A. LA RUE,
Secretary Cattle Sanitary Board.

Hon. MIGUEL A. OTERO,
Governor, Santa Fe, N. Mex.

List of inspectors employed by the cattle sanitary board January 1, 1898.

O. N. Meyers, Kansas City, Mo. C. F. Hartman, Denver, Colo. C. E. Railston, Engle; T. A. Gray, Clayton; D. O. Bell, Endee; R. L. Moss, Roswell; C. L. Ballard, Roswell; D. R. Harkey, Eddy; J. F. Hinkle, Lower Penasco; J. E. Cree, Fort Stanton; W. C. McDonald, White Oaks; W. N. Fleck, El Paso; W. C. Roy, Mora; T. D. Burns, Parkview; G. E. Lyon, Raton; W. C. Pearce, La Belle; M. Littrell, Springer; C. Lewis, Watrous; P. D. McElroy, Las Vegas; R. Lewis, Albuquerque; J. Phillips, Deming; J. Robson, Lordsburg; S. Locke, Magdalena; H. B. White, Hillsboro; A. Lobb, El Paso; C. Le Bawn, Grafton; G. Doyle, Catskill, N. Mex.

AUGUST 25, 1898.

SIR: I have the honor to submit herewith the report of the New Mexico section of the climate and crop service of the Weather Bureau, United States Department of Agriculture, for the fiscal year ending June 30, 1898.

Very respectfully,

R. M. HARDINGE,
Section Director.

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

REPORT OF THE NEW MEXICO SECTION OF THE CLIMATE AND CROP SERVICE OF THE WEATHER BUREAU, UNITED STATES DEPARTMENT OF AGRICULTURE.

The section was organized in 1895, under the auspices of the United States Weather Bureau, the Territorial legislature appropriating $700, or so much thereof as may be necessary, for the printing of climatological data and for incidental expenses. Each succeeding assembly has appropriated annually a like amount. The equipment of stations, stationery supplies, and all other expenses incident to the collection, collation, and dissemination of the data, excepting printing, are borne by the United States Weather Bureau.

The number of stations fully equipped with meteorological instruments is forty-five, but of this number only about thirty-five were making regular reports at the close of the year, including two military posts and reports from two station agents of the Southern Pacific Railway. Each county in the Territory, excepting Taos, has at least one fully reporting station, the station in that county at present being in abeyance.

The publications consist of a weekly bulletin during the crop season, a monthly report, and an annual summary. The weekly climate and crop bulletin is a brief digest of reports received from crop correspondents in different sections of the Territory, with remarks pertinent to the effects of the weather on current crop conditions. About 400 copies of the bulletins are issued every Tuesday, and the subject-matter is widely copied by the press of the Territory. A rough estimate places the circulation by this means at 15,000. The monthly report is a neat quarto pamphlet, containing in detail the meterological records of the several stations arranged in convenient tables, maps showing graphically the temperature gradients and distribution of rainfall over the Territory, a brief résumé of the crop conditions for the month, and remarks and clippings relative to the work of the section. About 500 copies are printed and distributed. The annual report is also a printed quarto pamphlet, containing tabulated summaries of the data from the several stations

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for the past year and charts showing annual temperature gradients and precipitation distribution.

The section center also has supervision over the dissemination throughout the Territory of the official weather forecasts. The official in charge of the section center at Santa Fe receives the forecast by telegraph daily from Washington, which in turn is telegraphed to a number of addresses in the Territory, where further distribution to neighboring communities is effected through the local mails.

The observers and correspondents reporting to the section center receive no remuneration for their services, and the public spirit manifested by them in so faithfully discharging their voluntary duties is deserving of the highest appreciation.

Monthly and annual mean precipitation for the year 1897, with departures from the normal.

Stations.	January.		February.		March.		April.		May.		June.		July.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Albert	0.45	+0.23	0.65	+0.28	0.55	—0.12	0.32	—0.18	3.00	0.86	4.27	+2.20	1.56	—2.10
Albuquerque	0.57	+0.21	0.13	—0.11	0.72	+0.54	0.63	+0.36	2.07	+1.78	0.99	+0.10	0.31	—0.87
Alma	2.33	.....	0.47	.....	0.57	.....	0.15	.....	0.11	.....	0.72	.....	3.04	.....
Angus V V Ranch	2.30	.....	T	.....	0.50	.....	0.55	.....	1.70	.....	1.81	.....	5.15	.....
Aztec	1.21	.....	1.30	.....	0.94	.....	0.23	.....	1.56	.....	T	.....	0.78	.....
Bernalillo	0.28	.....	T	.....	0.08	.....	0.55	.....	2.23	.....	0.63	.....	0.69	.....
Bluewater	0.10	.....	1.10	.....	0.40	.....	0.50	.....	1.80	.....	0.12	.....	0.75	.....
Buckmans	1.88	.....	1.02	.....	2.29	.....	1.35	.....	4.66	.....	1.11	.....	3.30	.....
Chama	2.58	+0.19	4.90	+1.22	5.53	+3.76	0.79	—0.41	.....	.....	.....	.....	.....	.....
Clayton	0.38	.....	1.10	.....	0	.....	1.05	.....	4.45	.....	3.29	.....	1.26	.....
Deming	1.55	+1.12	0	—0.42	0.42	+0.02	0	—0.08	0	—0.28	0.50	+0.35	2.89	+0.97
Eddy	0.41	+0.01	0	—0.54	0.33	+0.25	0.43	+0.29	1.52	+0.58	0.66	—0.90	0.50	—1.28
Engle	0.40	.....	0	.....	1.01	.....	1.56	.....	1.20	.....	1.58	.....	3.79	.....
Espanola	0.32	.....	0.14	.....	0.94	.....	0.16	.....	3.48	.....	0.08	.....	0.92	.....
Estalina Springs	1.14	+0.43	0.35	—0.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Bayard	1.10	+0.39	0.20	—0.80	1.05	+0.54	0.10	—0.15	T	—0.33	0.60	—0.03	3.38	+0.17
Fort Union	0.20	—0.33	0.05	—0.38	0.82	+0.28	0.70	—0.08	9.73	+8.25	3.39	+1.27	2.36	—1.65
Fort Wingate	0.41	—0.65	4.20	+2.66	1.60	+0.64	0.11	—0.70	0.70	+0.16	0.25	—0.31	0.91	—1.51
Gallisteo	1.45	.....	0.14	.....	0.66	.....	0	.....	4.80	.....	3.61	.....	1.08	.....
Gallinas Spring	1.67	+0.56	0.91	+0.40	1.53	+0.97	0.02	—1.01	5.46	+3.91	0.79	—1.35	3.05	+0.43
Gila	2.11	.....	0.26	.....	0.87	.....	T	.....	0.07	.....	0.15	.....	1.73	.....
Gold Hill	.....	.....	4.00	.....	3.20	.....	2.20	.....	4.39	.....	.....	.....	.....	.....
Hillsboro	0.92	+0.15	0.02	—0.84	0.50	+0.20	0.20	—0.10	0.35	—0.21	0.42	+0.02	3.44	+1.11
La Belle	1.15	.....	2.50	.....	3.80	.....	0.86	.....	5.05	.....	1.57	.....	.....	.....
Las Cruces	0.35	—0.02	0	—0.49	0.46	+0.20	0.23	+0.11	1.54	+0.92	0.07	—0.26	2.25	+0.19
Las Vegas	0.69	+0.14	0.70	—0.61	1.43	+0.72	0.37	—0.41	6.63	+4.69	1.23	—0.09	1.18	—3.56
Lordsburg	1.21	+0.62	0.20	—0.20	0.12	—0.31	0	—0.09	0.05	—0.31	0.12	—0.16	3.95	+2.39
Los Lunas	1.45	+0.85	0.25	—0.22	0.15	—0.54	0.50	—0.03	1.30	—0.02	0.25	—0.25	0.80	—0.20
Lower Penasco	1.40	.....	T	.....	.....	.....	0.50	.....	0.85	.....	0.55	.....	5.60	.....
Monero	1.37	+0.07	2.25	+0.01	2.31	+0.85	0.84	+0.16	2.55	+1.24	0.32	—0.15	2.86	+0.45
Ocate	0.65	.....	0.70	.....	0.80	.....	0.61	.....	9.25	.....	5.51	.....	2.29	.....
Olio	.....	.....	.....	.....	T	—0.26	T	—0.09	1.59	+0.97	0	—0.15	0.39	—0.17
Puerto de Luna	1.70	+1.00	0.20	—1.11	0.80	+0.25	0.35	+0.19	2.05	+0.65	2.02	+0.50	1.62	—0.73
Raton	0.20	.....	0.51	.....	0.40	.....	0.20	.....	4.08	.....	2.12	.....	0.10	.....
Rincon	1.23	.....	0	.....	0	.....	0.18	.....	0.88	.....	0.20	.....	1.95	.....
Roswell	1.12	+0.68	0	—0.38	0.59	+0.43	1.35	+0.89	3.76	+2.21	1.42	+0.16	2.78	+0.45
San Marcial	0.58	.....	T	.....	0.34	.....	0.37	.....	1.63	.....	0.85	.....	1.18	.....
Santa Fe	1.11	+0.51	1.10	0.27	2.06	+1.42	0.87	+0.15	4.35	+3.29	0.57	—0.37	2.85	—0.07
Shattuck's	1.28	.....	0.20	.....	0.23	.....	0.81	.....	1.26	.....	2.45	.....	1.95	.....
Socorro	0.51	+0.17	0.05	—0.19	0.58	+1.28	1.00	+0.82	1.20	0.83	0.57	+0.23	2.03	+0.26
Springer	0.50	+0.32	0.37	+0.20	0.65	+0.24	0.10	—0.66	5.26	+3.82	4.94	+4.11	2.71	—0.57
Valley Ranch	0.50	.....	0.80	.....	1.10	.....	T	.....	4.68	.....	.....	.....	1.12	.....
White Oaks	2.32	.....	0.55	.....	1.21	.....	0.45	.....	1.27	.....	1.84	.....	1.78	.....
Winsor's	1.35	.....	0.38	.....	2.24	.....	1.37	.....	4.43	.....	1.77	.....	1.98	.....

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Monthly and annual mean precipitation for the year 1897, with departures from the normal—Continued.

Stations.	August.		September.		October.		November.		December.		Annual.	
	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.	Precipitation.	Departure.
Albert	2.81	+0.75	0.42	—1.89	1.79	+0.75	0	—0.28	0.09	—0.92	15.91	— 0.06
Albuquerque	1.31	—0.18	1.22	+0.47	1.44	+0.59	T	—0.37	0.35	—0.07	9.74	+ 2.55
Alma	2.16	.....	4.15	.....	1.95	.....	T	.....	.....	.....	.....	.....
Angus V V Ranch	3.56	.....	2.72	.....	1.70	.....	0.78	.....	0.30	.....	26.07	.....
Aztec	0.49	.....	2.79	.....	1.53	.....	0.05	.....	0.32	.....	11.20	.....
Bernalillo	0.47	.....	4.02	.....	1.77	.....	0.10	.....	0.07	.....	11.49	.....
Bluewater	0.93	.....	3.00	.....	3.20	.....	T	.....	0.50	.....	12.40	.....
Buckmans	3.54	.....	3.09	.....	3.51	.....	0.03	.....	1.35	.....	27.13	.....
Chama	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clayton	1.79	.....	0.35	.....	1.67	.....	0	.....	1.15	.....	16.42	.....
Deming	.....	.....	1.87	+0.26	1.57	+0.65	0	—0.72	T	.....	.....	.....
Eddy	5.04	+1.94	0.76	—1.08	0.20	—0.60	T	—0.19	T	—0.36	9.85	— 1.95
Engle	3.38	.....	3.23	.....	0.74	.....	0	.....	0	.....	16.89	.....
Espanola	1.01	.....	2.20	.....	0.87	.....	.....	.....	0.30	.....	.....	.....
Estalina Springs	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Bayard	5.31	+2.67	4.11	+2.30	1.90	+0.85	0	—0.63	0.25	—0.56	17.00	+ 3.63
Fort Union	4.33	+0.14	1.16	—0.83	6.43	+5.53	0	—0.63	T	—0.53	29.17	+11.05
Fort Wingate	1.03	—1.22	3.11	+1.83	3.67	+2.58	0.40	—0.34	2.55	+1.55	18.94	+ 4.50
Galisteo	.....	.....	1.07	.....	1.50	.....	0	.....	0.90	.....	.....	.....
Gallinas Spring	1.09	—1.43	1.01	—0.93	1.51	+0.22	0	—0.54	0.50	—0.33	16.96	+ 1.25
Gila	2.42	.....	5.26	.....	1.38	.....	T	.....	0.19	.....	14.44	.....
Gold Hill	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hillsboro	3.22	+1.36	5.38	+3.12	2.57	+1.51	0.01	—0.64	0.10	—0.23	17.13	+ 5.65
La Belle	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Las Cruces	1.16	—0.71	2.14	+1.23	0.73	—0.18	T	—0.40	0.03	—0.54	8.96	+ 0.08
Las Vegas	3.29	—0.34	0.79	—1.55	1.94	+0.78	0	—0.89	0.59	—0.17	17.84	+ 2.36
Lordsburg	1.25	+0.52	.....	.....	.....	.....	0	—0.46	.....	.....	.....	.....
Los Lunas	.....	.....	0.55	—0.69	0.80	—0.25	T	—0.20	0.15	—0.18	.....	.....
Lower Penasco	3.15	.....	1.80	.....	1.05	.....	0.10	.....	0.25	.....	.....	.....
Monero	2.04	+0.17	3.66	+1.94	1.99	+0.76	.....	.....	0.70	—1.12	.....	.....
Ocate	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Olio	T	—0.22	2.15	+1.32	.....	.....	.....	.....	0	—0.89	.....	.....
Puerto de Luna	3.09	—1.13	0.63	—1.10	0.80	—0.56	0.10	—0.15	.....	.....	.....	.....
Raton	0.36	.....	0.11	.....	3.57	.....	0	.....	0.10	.....	11.75	.....
Rincon	2.61	.....	4.23	.....	0.46	.....	0	.....	T	.....	11.74	.....
Roswell	2.94	+0.25	1.25	+0.15	0.44	—2.10	T	—0.80	T	—0.32	15.65	+ 2.53
San Marcial	0.38	.....	2.92	.....	1.88	.....	.....	.....	.....	.....	.....	.....
Santa Fe	2.33	—0.28	2.49	+1.01	1.95	+0.95	0.08	—0.70	0.64	—0.20	20.40	+ 6.15
Shattuck's	3.77	.....	4.66	.....	0.68	.....	T	.....	.....	.....	.....	.....
Socorro	1.02	—0.24	2.47	+1.26	1.18	—0.56	0	—0.44	0	—0.76	10.61	+ 2.28
Springer	1.73	—0.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Valley Ranch	3.99	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
White Oaks	2.28	.....	2.85	.....	0.99	.....	0.06	.....	0.78	.....	16.38	.....
Winsor's	3.57	.....	3.77	.....	3.39	.....	0.20	.....	1.04	.....	25.59	.....

THERMAL SPRINGS OF NEW MEXICO.

Excepting the famous Yellowstone National Park, situated in the northwest corner of Wyoming, there is no other locality outside the Territory of New Mexico that contains so many natural thermal springs. This fact is not generally known throughout the States, and I avail myself of the opportunity to say a few words about these health shrines of nature's own furnishing, so frequently sought by the unfortunate sufferer from disease. Many persons not informed upon the natural resources of their own country annually flock abroad to seek relief from the waters of the various European "spas." Many of these persons might be induced to visit the great natural springs so numerous in this Territory could the matter of their medicinal merit be brought to notice in such a way as to show them that what they seek abroad can readily be found at home, and that in curative properties the natural mineral springs of New Mexico excel many of those of European repute.

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Accurate analyses made by competent chemists show the composition of most of the springs found in New Mexico to be superior in many respects to those enjoying the highest reputation in Europe and in other countries. Many of these places are far removed from the general line of travel, but those best known to-day are easily accessible to the tourist and health seeker, and are reached by good roads and stage lines. Many of them are equipped with modern hotels and bathrooms, good food, good service, healthful surroundings; in fact, ideal conditions to carry out a line of treatment where regularity, isolation, physical and mental rest are important factors. It would be a work of supererogation to attempt an enumeration of the many afflicted persons who have visited these springs, taking a course of the waters, and returning to their homes greatly benefited in health. A glance at the chemical composition of many of these waters will show that they compare favorably with many of those most sought in various parts of the world.

The geologic processes are so recent in New Mexico that nearly every county in the Territory has its healing, hot, or mineral springs. The purpose of this article is only to give a few facts concerning the more accessible resorts. Many important places are necessarily omitted, because the average tourist would be unable to visit them.

In geographical order the first to be mentioned are—

FOLSOM HOT SPRINGS.

Situated near Alps, a station on the Denver, Fort Worth and Texas Railroad, 59 miles south of Trinidad, on the summit of the Raton range of mountains, close to the extinct volcano of Capulin, in Colfax County, near the northern boundary of the Territory. The altitude is about 6,500 feet, and the location is very beneficial for consumptives. They have fine medicinal properties and promise to become of prominence.

LAS VEGAS HOT SPRINGS.

In San Miguel County, at the mouth of the picturesque Gallinos Canyon, on the banks of the Gallinos River, is situated the Las Vegas Hot Springs, famed throughout the length and breadth of the land for their curative virtues in a multitude of diseases.

The springs are twenty-two in number, and from analyses made by Prof. F. V. Hayden, of the United States Geographical Survey, the following is extracted:

Constituents.

	1.	2.	3.
Sodium carbonate ..... per cent..	1.72	1.1	5
Magnesium carbonate ..... do....	1.08	10.6	10.43
Sodium sulphate ..... do....	14.12	15.43	16.21
Sodium chloride ..... do....	27.26	24.37	27.84
Potassium ..... do....	Trace.	Trace.	Trace.
Lithium ..... do....	St. trace.	St. trace.	St. trace.
Silicic acid ..... do....	1.04	Trace.	2.51
Iodine ..... do....	Trace.	Trace.	Trace.
Bromine ..... do....	Trace.	Trace.	Trace.
Temperature ..... degrees F..	130	123	123

In its chemical composition this water resembles in many respects the waters of the famous hot springs of Teplitz, in Austria, while in its two

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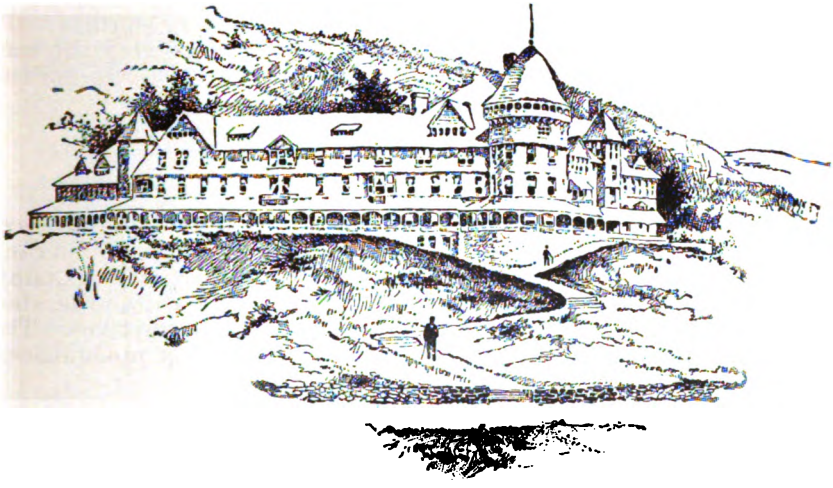

MONTEZUMA HOTEL, LAS VEGAS HOT SPRINGS.

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chief active constituents, the carbonate and sulphate of sodium, it may recall the somewhat analogous, though very much stronger, waters of Carlsbad, justifying in a degree the name often given it of "dilute Carlsbad water." This dilution, however, is more frequently a benefit than a disadvantage, for it permits a larger amount of the water to be taken, thus securing the valuable solvent and eliminating powers of the water itself, together with the remedial virtues of its mineral constituents.

OJO CALIENTE (HOT SPRINGS).

These celebrated hot springs are located in the midst of the ancient Cliff Dwellers, 25 miles west of Taos and 50 miles north of Santa Fe, N. Mex., and about 12 miles from Barranca Station, on the Denver and Rio Grande Railway, from which point a daily line of stages run to the springs. The temperature of these waters is from 90° to 122° F. The gases are carbonic. Altitude, 6,000 feet; climate, very dry and delightful the year round. There is now a commodious hotel for the convenience of invalids and tourists, and the reputation of these wonderful medicinal waters is fast spreading. These waters contain 1,686.34 grains of alkaline salts to the gallon, being the richest alkaline hot springs in the world. An analysis of these waters shows a total of 288.09 parts in 100,000 divided as follows:

Sodium carbonate	196.95
Calcium carbonate	4.20
Iron carbonate	20.12
Sodium chloride	40.03
Arsenic	10.08
Lithium carbonate	1.22
Magnesium carbonate	6.10
Potassium sulphate	5.29
Silicic acid	4.10

JEMES HOT SPRINGS

Are in Bernalillo County, in Santiago Canyon, being a branch of the Jemes Creek, which 9 miles south connects with another branch running through Guadaloupe Canyon. To reach them one has to travel from Santa Fe by wagon road to Pena Blanca, 27 miles distant west, crossing the Rio Grande there, and thence keeping a western course through the foothills of the Valles Mountains to Jemes pueblo, 26 miles; from there it is 13 miles to the first group of springs, at Archuleta post-office; or from Bernalillo, on the Atchison, Topeka and Santa Fe Railroad; also by wagon road past Santa Ana and Zia (or Silla) pueblos to San Ysidro and thence to Jemes pueblo, where this road and the former join, distant 27 miles.

Both roads are sandy, but the latter especially so, running for about 13 miles through Jemes Canyon.

A much better road, running from Archuleta north and northeast through the mountains and ending at Espanola, has recently been constructed.

There are several groups of hot springs in Santiago Canyon, but those at Archuleta, and 2 miles farther north, are most frequented. At Archuleta are ample hotel accommodations. Many health seekers prefer the "upper group" and camp there. At both places the scenery is enchanting and the atmosphere dry and healthy.

The lower springs, at Archuleta post-office, have an altitude of 6,620 feet above sea level. Limestone and sandstone of the Carboniferous

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age form the sides of the canyon, 1,000 feet high, often changed from their original position by volcanic materials. There are here:

1. A geyser with an opening of 1 square foot, a temperature of 168° F., running about 50 gallons a minute, with escaping carbonic acid and deposits of white carbonate of lime.

2. A spring of 130° F. with free carbonic acid and red-brown deposits.

3. A spring of 119° F. with "alga" (crytogamic water plants). A black sulphate of iron forms on them, a result of the action of sulphureted hydrogen upon carbonate of iron and oxide of iron in the alga. The sulphureted hydrogen is a product of the reduction of gypsum.

There are more springs, with a temperature from 102° to 108° F. The total salts in 100 parts of water amount to 0.2401 parts of sodium, lime, and magnesia. These springs are especially beneficial to rheumatic diseases.

The upper group, 2 miles from Archuleta, in the same canyon, consists of 42 springs. Their elevation is about 6,740 feet above sea level and their temperature varies from 70° to 105° F.

They flow from caves of carbonate of lime, some of which are 20 feet in height. Combined they form a dam or dike 30 feet high and 200 feet long. The springs contain 37.26 parts solids in 100 parts water, mostly chloride of sodium and sulphate and carbonate of soda, lime, and magnesia. They greatly resemble the famous Marienbad.

Besides the hot springs, north of the upper group are cold mineral springs. Half way between the two groups is an extensive ruined pueblo.

CHERRYVILLE SPRINGS.

In Socorro County, at Cherryville, is the next occurrence of noted springs. These are found near the head of the cañada or falls of the Alamosa, whence Geronimo started out on his famous raid. They are accessible by stage from Engle, a station on the Atchison, Topeka and Santa Fe Railroad. They are on the eastern slope of the Black Range. The temperature is 130° F. and the altitude 6,540 feet.

GILA HOT SPRINGS.

In the southwestern part of Socorro County, on the west of the Gila or Diamond Creek, as it is called, is a group of springs, at 5,545 feet altitude, that are easily reached by wagon from Silver City. The temperature is 130° F. and they carry similar ingredients to the Jemes Springs.

APACHE TAJOE SPRINGS.

Four miles from Whitewater, on the Atchison, Topeka and Santa Fe Railroad, are also found some good springs of 97° F. They are in Grant County, 30 miles north of Deming.

HUDSON SPRINGS.

Twenty-four miles north from Deming, and within 3 miles of Hudson, on the Santa Fe road, are several good springs. These springs are widely known and much frequented, both on account of their medicinal value and the lovely climate and beautiful scenery.

The average temperature of the springs is 130° F. and their altitude 5,782 feet above sea level. The main spring is a mound of soda, lime, and magnesia, in the center of which is a large depression containing the permanently boiling water, which has effected many cures of rheu-

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matism and kidney and blood diseases. The water contains in 1 gallon the following solids:

	Grains.
Silica	1.552
Alumina and oxide of iron	.530
Carbonate of lime	4.448
Carbonate of magnesia	2.624
Sulphate of soda and potassium	13.547
Chloride of soda	2.286
	24.987

Some other undeveloped springs are about 3 miles north of Hudson Hot Springs.

It remains to be said that close to the western boundary of the Territory are several other locations of hot springs, of which one is about 10 miles southwest of Zuni and one in the valley of the San Francisco River, the latter at an altitude of 5,630 feet above sea level and having an average temperature of 84° F., largely used by the Indians and the people of the vicinity, respectively.

AZTEC SPRINGS.

This is a cold-water spring situated 4 miles east of Santa Fe. From the surrounding hills and ridges a magnificent view is had of the country for many miles, including the city of Santa Fe, the valley of the Rio Santa Fe, and portions of the valley of the Rio Grande del Norte, together with the magnificent mountain ranges in different directions.

Col. D. L. Huntington, surgeon, U. S. A., and curator to the United States Medical Museum, says of this spring: "The water contains 18 grains to the gallon of solid material, and it resembles many of the celebrated German springs, and would be found very useful in such diseases as catarrh of the bladder and all forms of dyspepsia and intestinal indigestion. The water is also useful as a gentle and constant tonic."

Analysis of this water made by F. W. Clark, chief chemist of the Smithsonian Institution, Washington, D. C., shows it to contain the following per 1,000 parts:

Silica	0.220
Carbonate of calcium	1.538
Magnesium	.605
Sodium chloride	.225

With enough carbonic-acid gas to retain the carbonates of calcium and magnesium in solution as bicarbonates.

Such healing waters, taken in connection with the pure, dry, and bracing climate of the mountains, should surely prove a boon to those affected with many forms of disease, and the attention of physicians throughout the country is invited to the many merits they possess in the treatment of numerous forms of disease.

HORTICULTURE.

The first annual report of the New Mexico Horticultural Society, covering the year 1897, has just been issued. It contains an account of the fruit exhibit held last year in the city of Santa Fe and the efforts of the society to awaken an interest in horticulture and stimulate, by offering suitable prizes, the production of valuable varieties of fruit.

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The exhibit referred to was highly successful. It brought together a display which in many respects was remarkable. It showed that New Mexico, in the variety of its fruit products, having regard to quality as well as species, stands in the foremost rank among fruit-producing parts of the United States. Some States may produce certain species of fruit of superior quality to any yet produced in New Mexico, but the same States may fall short in respect of certain other species in which New Mexico may excel; so that it is in the uniformly high grade of its fruits that New Mexico surpasses the other parts of the Union.

Horticulture is a business to which the people of New Mexico may well give great attention. It would be practicable for them to supply large quantities of excellent fruit to the markets of the Mississippi Valley and the lake region. The climate of their Territory will admit of placing the products of their orchards and vineyards in the market at an earlier date than many competitive places, and care and experience in cultivation would in time enable them to produce varieties of a very superior grade.

Practically all the irrigated valleys of the Territory are adapted to fruit growing. The soil of the Rio Grande and Pecos valleys, for instance, is highly fertile, and irrigation has demonstrated its adaptability to both viticulture and horticulture. A good quality of wine could be produced by care in selecting the proper species of grapes. This has already been shown by what has been achieved in that direction. Altogether, the New Mexico Horticultural Society has an excellent opportunity for the accomplishment of a work of enormous value to the Territory.

Our horticultural fair was pronounced by all the most comprehensive and evenly balanced exhibition of fruits of all kinds ever seen, and it has stamped New Mexico as the most perfect fruit-growing section of the world, and while there are many exhibitions on a much larger scale, and some which might excel in some particular fruit, there is none which includes such a splendid showing of fruits of all kinds. There is one very noticeable thing about the fruit of New Mexico, and that is, it is entirely free from insects of all kinds, is firm, and of very fine flavor.

During the course of this fair it was visited by those familiar with the American Institute fairs in New York, with State fairs of the East, as well as those of Colorado and California, and all concurred that the fruit excelled anything seen before at similar fairs.

Among the exhibits were 246 entries of apples, 34 of crab apples, 125 of pears, 58 of peaches, 108 of plums, 13 of apricots, 37 of nectarines, 15 of quinces, 36 of grapes, 12 of nuts, etc.

When the premium list was published the criticism was made that the numbers of varieties of fruits required for the first premiums were so large that no entries of that character could be made. The schedule called for 40 varieties of apples, 40 of pears, 20 of plums, 5 of apricots, 5 of nectarines, etc. The result showed that our horticulturists are raising a much larger variety of fruits than was generally supposed, as in all the above cases the required number was actually exceeded.

Among the notable specimens were the following: Largest apple, weight, 23 ounces; circumference, 15¾ inches. Red Beitigheimer, weight, 18¼ ounces. Gravenstein, 14 ounces and 13⅜ inches. Russet, 13½ ounces and 13½ inches, etc.

Among the pears a Bartlett weighing 18½ ounces and an Idaho weighing 18 ounces were noticed.

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The Agricultural College (of New Mexico) exhibit showed a peach weighing 10¼ ounces, and a Pride of the Rio Grande weighed 10½ ounces.

A bunch of Muscat grapes, grown as far north as Espanola, weighed 25 ounces, though not ripe; and Stanwick nectarines from the same locality reached 5¾ ounces in weight.

No premiums were offered for vegetables and no provision made for their exhibition, but so many excellent specimens were brought in voluntarily that it is evident that arrangements should be made to include them as well as floral displays at subsequent exhibitions.

The horticultural fair which has just closed here was a great success from every point.

MEMBERSHIP AND INCOME OF THE NEW MEXICO HORTICULTURAL SOCIETY, INCORPORATED AS A TERRITORIAL INSTITUTION IN 1886.

The number of life members is 17; of annual members, 166.

As life membership practically cuts off future income, the society has decided to lay aside half of the sum received from life members as a permanent fund for the purchase of land or erection of buildings in the future.

The total receipts of the society during the past year were $712.40.

Life members	$150.00
Annual members	166.00
Admissions	169.45
Subscriptions	67.50
Donations	27.85
Premium, less expense	131.60
Total	712.40

AGRICULTURE—HORTICULTURE.

[George Vestal, agriculturist and horticulturist, New Mexico Agricultural College Experiment Station.]

AGRICULTURE.

Our agriculture is carried on by the aid of irrigation, and when water is plentiful abundant crops are produced. In San Juan, Rio Grande, Pecos valleys and other parts of the Territory modern farms exist, and when well managed are profitable. When a system of storing flood waters is put in operation immense areas will be put into cultivation. Alfalfa is the principal crop raised, producing three to four cuttings each season, yielding 3 to 5 tons of hay. It is an excellent feed, and most work horses receive no other at any time of the year and remain in good condition even when continually worked. Wheat is largely raised, principally by the Mexicans. As it yields more than any other grain crop, it is used for feeding purposes quite largely. Rye and barley also do well. The experiments carried on with sugar beets at this station and by farmers in the different parts of the Territory during the past year conclusively prove that beets of the highest quality can be produced in nearly every section of the Territory. Beets were produced which showed 10 to 22 per cent sucrose, great numbers of the samples running 14 to 17 per cent. The cultivation of the sugar beet is susceptible of a great development. Kaffir corn has proved to be a good crop in this climate and is largely cultivated in some sections. There are many crops not now cultivated which would prove profitable if attention were directed to them. Many sections of New Mexico, by reason of altitude or other conditions, have climates peculiarly their own, which would prove well adapted to some particular crop which would suggest itself to any live farmer. One great advantage the farmer has here over the Eastern farmer is the ease by which he can preserve his crops. The dry pure air retards decay to a great extent, and the absence of heavy dews and rains enables him to harvest and store his crops with but little waste.

HORTICULTURE.

It is in horticulture that New Mexico may expect her greatest development. The soil, when properly cultivated and irrigated, and the climate seem to be peculiarly adapted to the production of fine fruit. The soil is supplied with such essentia'

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elements for tree growth as lime, potash, etc., in such abundance as to be practically inexhaustible. These fertilizers form a large part of the expense bill of the fruit grower of the humid region. Our sunny climate produces a large, fine-flavored, high-colored, attractive-looking fruit, which greatly adds to its selling qualities.

The fruit industry of the Territory is still undeveloped. True, fruit growing has been largely carried on in San Juan County, the Rio Grande and Pecos valleys, and large quantities of fruit have been shipped to near-by and distant markets, successfully competing with fruit from other States; but the large area comprising the small valleys, mesas, and level tracts, when supplied with irrigating waters, will produce such fruits as their climates will mature in larger quantities and to a greater perfection than any other part of the United States.

VEGETABLES.

Vegetables of all kinds reach their highest development in the parts of the Territory having climates favorable to their growth, and when properly cultivated yield enormously. The quality of our fruits and vegetables will compare favorably with those produced anywhere. The celery of Bernalillo and Chaves counties has gained a wide reputation for its crispness and fine flavor and is quite largely shipped to adjoining States. The cabbage of northern New Mexico has been known for years to be as fine as can be produced. In all parts of the Territory onions of the largest size and finest quality are produced. The tomatoes of the Mesilla Valley when canned are superior to any yet brought to this market, and the demand for them is rapidly increasing.

TEN ACRES ENOUGH.

[W. S. Burke.]

WHAT A MAN CAN DO WITH A SMALL TRACT OF LAND, UNDER IRRIGATION.

Sweet potatoes of most excellent quality yield abundantly in all the valleys of the central and southern portions of the Territory, and constitute one of the best crops that the farmer can raise, because they enable him to realize a good return for his season's work from a very small tract of land, which is an important consideration to a farmer anywhere, but especially so to one in an irrigation country. The soil and climate of this country seem to be peculiarly adapted to the growth of the sweet potato; the quality of the product is fully equal to that of the famous potatoes of New Jersey, and a fair average crop will give from 900 to 1,000 bushels to the acre with proper cultivation. They never sell for less in the fall than $1 a bushel, and those that are kept into the winter usually bring as much as $2. From this it will be seen that 1 acre cultivated to sweet potatoes in New Mexico will yield the farmer as much money as he can hope to realize in a good year from 80 acres of corn or wheat in Kansas or Nebraska, and since the results are to be measured by dollars and not by acres, it will be apparent to anyone that the irrigation farmer, although he may not be able to cultivate fields as broad as those of his neighbor in the rain belt, has a better prospect of success and a decidedly better chance of a bank account at the end of the year.

The onion is another product that seems to be peculiarly adapted to this section of the country. The large white Spanish onions, which grow to greater perfection in the Southwest than anywhere else in the United States, afford one of the most profitable crops that can be grown in this Territory, and requires irrigation to bring it to perfection. On account of its beautiful silvery color and its peculiar mild flavor, this onion finds ready sale in any part of the country and always brings the highest market price. The yield is about 500 bushels to the acre under proper cultivation, and the price at home ranges from $1 to $2.50 per bushel.

Celery and asparagus are also articles which are especially adapted to the soil and climate of this country and attain here a degree of excellence rarely found in such articles grown elsewhere.

The New Mexico celery is far superior to that grown in California, and is pronounced by all who try it fully equal in all respects to the famous Kalamazoo product, which is noted throughout the country for its superiority.

And when it comes to asparagus, New Mexico can fairly claim to "beat the world," for nowhere else on the American continent is there raised asparagus which can at all compare with that grown in the valleys of central and southern New Mexico. In many places there are large quantities of saltpeter in the soil (the American settlers call it "alkali" because it comes to the surface after a rain and makes the ground white, causing it to resemble the alkali plains of the North). This article, which is deleterious to many kinds of vegetables, is the favorite food of asparagus, and obviates the necessity of applying salt to the ground, as has been done wherever this vegetable is grown in the Eastern or Middle States. It also causes the plant to attain a degree of excellence and flavor in this country which is unknown elsewhere. Dur-

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ing April and May, the months when the cutting is done, the shoots will attain, under favorable conditions, a growth of about 6 inches in a day, every particle of which is edible; there is no woody portion to be thrown away; the whole stock is as soft and tender as green peas, and the flavor is proportionately superior. Sample lots of New Mexico asparagus have been sent to many parts of the country, and the verdict is everywhere the same: "The best I ever saw." It is not only better than that grown in the East, but is so much better that its superiority is noticeable at once, even to the casual observer. Actual experience has shown that it will bear shipping to Portland, Me., and that is as far away from New Mexico as you can get in the United States, so the whole country is open to us as a market, and that the article can be sold wherever it is introduced goes without saying; it will sell itself.

An asparagus bed of 1 acre will yield after the third year about 200 pounds a day for sixty days—which is as long as it is wise to cut it; this will bring an average of 10 cents a pound during the season. An acre in sweet potatoes will yield 900 bushels, worth $1 a bushel at least, as soon as they are dug. An acre of onions will yield 500 bushels, worth never less than $500, and an acre of celery can be relied upon to bring at least $600. A man needs 2 acres in alfalfa and 2 in corn or oats for his horse and cow, and 2 acres for house lot, orchard, and kitchen garden. That makes 10 acres in all, which is as much as any man needs to farm for profit, and is fully as much as the most industrious man can cultivate properly. There is an abundance of good land for such purposes to be had in all parts of the Territory. Take for example the Rio Grande Valley, the oldest portion of the Territory in point of settlement—a section that has been settled for more than three hundred years—and yet not one-fourth of the available land in this section of the country is under cultivation at the present time. Beginning a little above Bernalillo and going down to a point a little below San Marcial, we have one of the most desirable and fruitful sections of this famous valley, and lying right in what may properly be called the agricultural center of New Mexico, a district of about 150 miles in length, and with an average width of about 5 miles, embracing 750 sections, or 480,000 acres; and yet a careful writer, who has traveled frequently over the district of country in question says: "If we concede that one-tenth of the land is now under cultivation we are making a very liberal estimate." But if we should almost double this very liberal estimate, we should still have in the district referred to about 400,000 acres of unused land—enough to furnish homes and profitable employment to 40,000 families, or more than the entire present population of the Territory. And there is no waste land in this district named—it is all arable and all tillable, and needs only the application of water to make it as productive as the best land in any part of the world. The Rio Grande carries water enough for the cultivation of the whole of this tract without encroaching in the least upon the rights of those who live farther down the river. True, there would not be water enough under the system of irrigation at present in use—a system that was adopted three hundred years ago, when economy in the use of water was something wholly unknown and totally unnecessary, and under which the water wasted is at least five times as much in quantity as the water used—but it is not to be supposed that this system will continue many years longer. Modern systems of irrigation are being introduced in all other sections of the country where farming is done by irrigation. New Mexico will not remain long behind the times. The system practiced in California and Colorado, and in the Pecos Valley in our own Territory, which puts the water upon the cultivated fields and not upon the waste places and the wagon roads, will soon be adopted in this section, and then, as we have said, the Rio Grande will furnish water enough to irrigate all the lands in its valley, and will support more people than are now in the whole Territory.

In a country like New Mexico, where all kinds of fruit and vegetables can be grown to such perfection and in such profusion, is the place for canning factories, and it is safe to say that there is hardly a settlement in the Territory in which there is not at the present time a good opening for an establishment of this kind. The genial climate, the long seasons, the almost perpetual sunshine, and the rich soil, which is further enriched at every irrigation by the valuable sediment which is brought down from the mountains, all combine to produce conditions which are not surpassed in any part of the world for the successful growing of garden vegetables, and the yield of these is so enormous that it would hardly be believed by anyone who does not possess a practical knowledge of the subject. There is a reliable home demand for all such products, and everything of that sort that can be grown here will be needed to supply the wants of our own people; but there are comparatively only a few vegetables that can be kept for winter use without preserving or canning. It is a well-known fact that the people who live in the cattle and sheep camps and the mining camps and villages of the West are the largest consumers of canned goods in the world; many of them practically live out of tin cans. The area of country in the Southwest that can be used for mining and grazing purposes is so much greater than the area that can be cultivated, and such a great number of

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people must always find employment in those occupations, that all the vegetable products of the country will always find a ready market at home. But as is well known, it is necessary for the greater part of these products to be canned in order to be utilized. At present we are not producing one-fourth of the vegetables we consume, for want of proper facilities for preparing them for market, and while we are able to produce more and better vegetables than any other section of the United States, our people are fed mainly upon the inferior products of other sections. If this condition of things had to be permanent it would be rather discouraging; but it will not continue very much longer; the good openings that are presented in all parts of the Territory for the establishment of canning factories will soon be taken advantage of by men who are looking for good business opportunities. The only reason why such industries have not already been established in all sections of the Territory is the fact that our present careless and haphazard system of irrigation renders the supply uncertain; but given a reliable modern system, such as will soon be introduced in every section where there are intelligent, progressive people, and it will be but a little while before we have canning factories enough established in the Territory to take care of all the vegetables we can raise, and the large sums that we now send abroad every year to pay for stuff that we buy from other sections will be kept at home for the benefit of our own people.

With respect to canned goods, woolen goods, and all other articles which can be manufactured successfully here, we will not only have the advantage of a market at home for all we can produce, but the Territory is so far away from any other manufacturing center that the cost of transportation on goods shipped in from abroad is great enough to give the home manufacturer a good "protective tariff," which no Congress can repeal.

NEW MEXICO APPLES.

[From the Scranton, Pa., Tribune.]

THE ORCHARDISTS OF THE EAST MUST LOOK TO THEIR LAURELS.

The best display of fruit seen in Scranton in many a day is a collection of New Mexican apples in the window of Clark, the florist. They fill a large glass case and are veritable "apples of gold." If New Mexico produces such fruit as this she certainly has received the choicest of the goddess Pomona. Some of these beautiful spheres are flaming red, others golden yellow, or crimson, or violet. There are blushing Winesaps, golden Pearmains, transparent white Nonesuch, and gorgeously striped Ben Davis. If such fruit could replace some of the disreputable worm-eaten and effete apples found in our markets at the present time, many a heart would rejoice as the memory of the apples of childhood come floating back, for there are none so delectable as those of "auld lang syne," except it may be these reminders of far-away New Mexico. We hope our agricultural friends may see them. The growers of the West, it is said, are planting largely with an eye to the Eastern market, so a word to the wise may be sufficient. The orchardists in the East must prune and cultivate, or his far-away competitor, with a superior article, will come in and take his home market in fruit, as he has already in cereals.

HOW THEY RANK.

The crop report for November, issued by the United States Department of Agriculture, contains some statistics regarding the apple crop of the country which can not fail to impress the orchardist with the superiority of New Mexico over any other State or Territory in the Union as an apple-producing country.

The great apple State of the extreme east is New York, and New York apples are noted the whole country over for their excellent quality and flavor. But so far as quality goes the palm must be awarded to the apples raised in this Territory. The statistics published in the report mentioned show that the yield of the past year, as compared with a full crop, is only 35 per cent. In New Mexico the yield, as compared with a full crop, for the same season, was 113 per cent. In Illinois the yield was 82 per cent; Missouri, 56 per cent; Michigan, 18 per cent; Colorado, 94 per cent; California, 100 per cent.

New Mexico leads in the production of fruit, both in quantity and quality. The Territory also leads in the per cent of production in pears. There can be said but very little more in regard to New Mexico as a fruit section. The high altitude of the most of the Territory renders dangers from insect pests less than in other sections, while the irrigation system insures a full crop or more every year. In this connection it can also be said that there are thousands of acres of land suitable to fruit raising that only need water placed upon them to make the growing of fruit of all kinds profitable and certain. New Mexico is rapidly coming to the front as a horticultural country, and the day is not far distant when these lands will be valuable.

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NEW MEXICO APPLES.

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THE CULTIVATION OF THE GRAPE IN THE MESILLA VALLEY.

Among the natives the grape is the principal fruit raised in the valley, although many of the American farmers own good vineyards. The former grow the Mission grape almost exclusively, whereas the latter mostly raise the Muscat of Alexandria, Black Hamburg, Gros Colmar, Malvoisie, and other so-called California varieties, all of which thrive perfectly.

The grapes begin to ripen toward the end of July, and the shipping season usually lasts till about the last week in October. A great deal of wine is made, but it is usually more profitable to sell the fruit for table use. During the season large quantities are shipped, mostly in 10-pound baskets, to all the towns in New Mexico, and to many of the markets of Arizona, Colorado, Texas, Louisiana, etc.

The vineyards are usually started by putting a couple of cuttings during March every 8 feet each way, although many of the older vineyards are set at 6 feet apart. When the cuttings begin to grow, the weaker one is pulled out and the stronger left. The object of setting two cuttings is to make sure of one growing. At 8 feet apart each way 680 vines go to the acre, and this seems a better way or distance, than 6 feet apart, as it gives more room for cultivation. Some of the most progressive horticulturists consider that the rows 10 feet apart and the vines 8 feet apart in the row (544 vines to the acre) is still better.

What is known as the "stump" method of training and pruning is followed. This consists in staking the vine during the first two years, so as to form a straight, upright trunk. The first year the vine is allowed to grow as it will, when it is cut back to its strongest eye. The second year all the buds are rubbed off to the height of 15 or 18 inches, and at the next pruning the cane is cut back to 18 or 20 inches, leaving two or three buds as a basis for the future head. From now the "short spur" system of pruning is adopted; that is, the canes are all allowed to grow as they please during the summer, and at the regular pruning in March these canes are cut back to one or two eyes, from which spring the bearing canes. Of course as the vines get old too many spurs are made, and many of them too long, when some of them must be cut out altogether. Under this system most of the grapes seem to thrive very well, although there is a great deal of careless staking and training in the early life of the vines, resulting in difficult pruning later on, and many of the bunches get spoiled by the mud, owing to the want of good, straight, strong trunks to hold up the fruit.

There is considerable difference of opinion as to whether the grapevines need to be hilled up during the winter in this valley. The old custom among the natives has been to cover the vines with hills of earth in the month of November and not to uncover until the following March, when it is time to prune. The mounds of earth are raised sufficiently high to just cover the buds which are to be left for the coming year. No irrigation is given during the winter, or until after pruning.

The object of this hilling up is not to protect the vines so much from the winter cold as from the cold, drying winds, which cause the trunk to crack and the canes to winterkill. It is, however, claimed by those who have tried it in recent years that if the vineyards be irrigated during the winter these dry, cold winds do no harm and the vines thrive better. Pruning is usually done in March, but earlier grapes are produced when the vines are pruned in the fall.

Undoubtedly much better results would be obtained if the vines were wider apart, better trained, and the surface soil kept well pulverized

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throughout the year. People taking up this industry would be well repaid for the care given their vineyards in the sale of their grapes at good prices—soon becoming independent.

VEGETABLES.

Most every kind of vegetable can be raised in this Territory except, perhaps, the Irish potato in some localities. The potato is a native of the mountain country in its wild state, and in the central and western parts of Socorro County, along the northern line of Colfax County, and extending southward for 100 miles along the base of the mountains, the finest potatoes in the world are grown. The raising of this crop requires very little work, and the yield is very large.

Turnips, carrots, ruta-bagas, and cabbage all do well. Of the latter, it is no uncommon thing to see heads weighing from 20 to 30 pounds, and occasionally one that weighs several pounds more. Cabbages are worth from 1 to 5 cents per pound, depending upon the season of the year when they are sold. Onions excel in size and flavor, and are a good paying crop.

FRUITS.

The fruit industry is coming to the front rapidly, and people coming to this Territory to settle learn what fine fruit can be produced here with much less trouble than in the States. There are many magnificent orchards in this Territory. The size and variety of the fruits raised would astonish and delight our Eastern orchardists. A large evaporator is now being built in Santa Fe.

Apples flourish luxuriantly. Pears, quinces, and plums appear to be in their native clime. The strawberry, currant, gooseberry, raspberry, and blackberry all thrive vigorously. The valley along the Rio Grande appears to be particularly adapted to all kinds of fruits, although all sections of New Mexico susceptible of cultivation will produce the finest variety of fruits, and most abundantly.

CEREALS.

Wheat, in quality, size, and quantity, is not excelled anywhere in the United States. Corn does well, and oats grow luxuriantly, but are generally cut green and fed in the straw.

TIMBER.

Both hard and soft pine, spruce, oak, cedar, walnut, mountain ash, quaking asp, box elder, cottonwood, etc., are all found in great abundance.

LUMBER INDUSTRY.

Extensive pine forests in New Mexico make the lumber industry here an important one. All over the Territory individuals are erecting sawmills, whose product is demanded and utilized by the people who use lumber for building purposes in the place of the ancient adobe. The profits of lumbering are large.

The Government, very wisely, has located several large forest reserves for the protection of the timber in this Territory, and from the care and attention being now given to the different forest reservations by the

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authorized agents of the Government much wealth will be derived for New Mexico in the near future. I would recommend that other reserves be located at as early a date as possible.

CANAIGRE.

An industry that is exclusively adapted to the arid southwest, and especially adapted to New Mexico, is the production of the canaigre plant. The following extract from Bulletin No. 21 of the Arizona Experiment Station will give the information asked by many as to whether canaigre may be grown in their respective localities:

The best conditions for the growth of canaigre are a cool but not freezing climate, a moderate amount of moisture, sandy, fertile soil, and probably, also, a sunny and arid atmosphere. These conditions are nowhere combined more perfectly or for a longer period of the year than during the six or seven cooler months in the arid southwest. * * * A mean temperature of about 70° or less is required for the growth of canaigre. Above this, even though there be abundant rain, as was the case in August, the roots will not do more than sprout feebly, and various attempts to make them grow in warm weather have failed. This seems to limit canaigre to the southwest, for nowhere else, excepting possibly in some southern States, is there so long a period of mild weather. It has been grown experimentally in Florida with some success, but in the Northern States the interval between the severe cold of winter and the extreme heat of summer is too short to allow of much root development. The sprouting of the roots in August, under the influence of rain, suggests that, in the culture of canaigre, one or two summers would prepare the plant to grow more promptly on the advent of cool weather.

The growing plant will stand a good deal of cold. When frosted the leaves lie prostrate on the ground, but immediately regain position when thawed out by the sun. The root also will endure freezing. It has been left in the ground all winter 60 miles north of New York City, subjected to a temperature as low as 15° below zero, without injury. At Lincoln, Nebr., the roots stood a very severe winter without any damage whatever. At Peoria, Ill., plantings made in 1892 were still alive in 1895, and similar results are noted at Washington, D. C., and Garden City, Kans. The new root development, however, is stated in a number of cases to be insignificant under such conditions.

As to locality, canaigre is found more commonly in sandy washes where water is more abundant. With irrigation it will make a good growth in any fertile, tillable ground, but the influence of soil conditions on actual production has been little studied. It seems to stand considerable alkali, and is even reported in the salt-grass meadows of Tia Juana Valley, near San Diego, Cal.

The tanning materials in canaigre remain pretty constant throughout the growing season, with, however, a small but distinct increase after the plants become established in vigorous growth. The amount of this increase in mature roots from year to year was further shown by taking four samples of wild roots, comprising every age up to about five years, dividing the samples as nearly as possible into successive years' growth, and analyzing. It was found that the average increase of tanning materials from year to year, in ten instances, was 1.64 per cent in water-free material. In one set of cultivated samples the averages of the first and second year's roots differed 2.64 per cent. This indicates a small but constant increase in the per cent of tanning materials from year to year, but holds true only so long as the roots retain their vitality. When they die the tanning substances quickly disappear. Although the percentage does not increase remarkably from year to year, the roots themselves become larger, so that the actual amount of tanning materials is much greater.

THE CULTURE OF GRAPES.

The Rio Grande Valley is well adapted to the cultivation of grapes The principal kind now existing is the "Mission grape," which was introduced by the "Catholic missionaries" as early as 1711, and has ever since proved to be the standard variety in this Territory, on account of the richness of its flavor, and the amount of sugar it contains. It makes an excellent red or white wine, and is equally valuable for the market. From experiments we know also that our Mission grape compares favorably with the French grapes for the manufacture of champagne.

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With skill and good management it can not be surpassed. The cultivation of the vine has been practically taught to the natives, and their methods have proved ever since fully successful as to the covering, uncovering, cleaning, and pruning of vines.

There is no doubt that the soil of this Territory is splendidly adapted to the cultivation of the grape. Of late years a number of new varieties of vines have been introduced by various parties, and are doing well; nevertheless, they require the same methods of cultivation as does the Mission grape.

One acre, or 1,062 vines, will yield each year about 12,744 pounds of grapes, or 910 gallons of wine. This is considered a moderate estimate.

FANCY TOBACCO SEED TO BE DISTRIBUTED AMONG NEW MEXICAN FARMERS BY THE COMMERCIAL CLUB OF ALBUQUERQUE.

The following letters relative to the culture of tobacco have been received by the Commercial Club of Albuquerque, and the seed mentioned is now at the club rooms awaiting distribution. The seed will be issued in small quantities to all farmers who wish to raise tobacco and who will agree to give the intelligent care and attention necessary to insure successful cultivation. The letters are self-explanatory:

CHICAGO, ILL., *December 22, 1897.*

COMMERCIAL CLUB, *Albuquerque, N. Mex.*

GENTLEMEN: Not long ago Mr. Chambers, general freight agent, sent me a sample of the tobacco raised in the vicinity of Albuquerque, which I sent to an expert grower in Virginia, who reports on same as follows:

"The tobacco you sent to me has an excellent flavor, but owing to the fact that it was cut before being thoroughly ripe, it cured up green. In as dry a climate as New Mexico, with the proper kind of seed to begin with, tobacco ought to cure a splendid bright-red color without using any fire at all. But in order to get the right color and flavor, two things are necessary—the right kind of seed, and allowing the plant to become thoroughly ripe.

"In New Mexico the plant bed should be made in February, and should be from 20 to 50 yards square, according to the size of the crop contemplated, and should be irrigated. The plant bed should be gotten in thorough order and the seed should be sown in it by the 1st of March.

"The plant should be ready to set out in June, and, if the ground is in good order, one rain or one irrigation will make the crop. Tobacco requires less water than any other plant I know of. The great trouble with us is that we have too much rain, which makes it cabbage or bunch up. If we could have moisture just when we wanted it, and not too much, and such soil as you have in the West, we would make the finest tobacco in the world.

"Hoping to hear from you soon, I remain, your friend,

"W. G. PILKINGTON."

Comment is unnecessary. Tobacco is one of the most important and most profitable of crops. On the strength of the opinion above given, by one qualified by long experience as a grower and manufacturer to speak knowingly, I would warmly advocate your body's taking up the matter of careful experimentation in tobacco culture, with a view to its becoming established on a sound basis as one of New Mexico's products. I will be glad to render any assistance in my power to that end. I have written for information as to the best seed to use.

Very respectfully,

JAMES A. DAVIS,
Industrial Commissioner, A. T. & S. F. Rwy. Co., Chicago, Ill.

ALFALFA HAY.

The remarkable development in the West of the species of hay known as alfalfa, within the past few years, can not fail to interest the farmer immigrant. Special attention is now given here to the cultivation of that crop, and it has proved a great success. It is a plant of wonderful power of growth. As a rule, three cuttings a season are

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made in the North and five in the South, which will average, for the season, one and a half tons per acre to each cutting.

It is a species of lucern, a perennial, an enormously prolific grower, containing a very high percentage of nutritive matter, and is of such a hardy, aggressive character that once it is firmly rooted it requires little attention other than an occasional irrigation and harvesting of the heavy crop of hay which it produces. It is the fodder plant of this region and the one factor that will permit stock raising and fattening to be successfully carried on upon modern scientific principles, in what has heretofore been known as the "arid region."

Formerly, from the want of some cheap fattening food, the far West was entirely dependent upon the agricultural States for its fattened beef. Cattle were shipped from New Mexico to Kansas or Missouri, fed there on corn, and then sent back as beef in refrigerator cars, to be eaten, perhaps, close to the place in New Mexico from where a few months previously, the thin ox had been shipped, thus necessitating a double journey of 600 to 1,000 miles, and an additional expense of 4 to 6 cents per pound for carriage alone. To-day a good percentage of the beef eaten in New Mexico is fattened here on alfalfa, and in the future, as more land is placed under irrigation, the proportion will be largely increased, for the profits are necessarily large, the cost of the double journey of the corn-fed beef being so greatly in favor of the New Mexico farmer.

Another, and perhaps a greater, revolution is being brought about by alfalfa, enabling New Mexico farmers to breed high-grade and thoroughbred bulls. Formerly ranchmen were obliged to go to the Middle States for the large number of high-class bulls they required for the improvement of their herds. The acclimatization of these upon the Western plains was accompanied by enormous loss, chiefly owing to the great difference in climate and pasture. To-day, with the aid of alfalfa, breeding such cattle is fast becoming an important industry in New Mexico. The climate here being the same and the grass similar to that upon the great cattle ranges, the mortality during acclimatization is slight, and cattlemen willingly give a higher price for a New Mexico than for an eastern bred bull.

Another important consideration to the advantage of this grass is that as cattle can largely depend upon the nutritious native grasses during the winter, the New Mexico farmer has three great factors in his favor: First, a higher value for what he raises; second, less cost of production; and third, a practically unlimited market at his door, with no heavy freight charges to pay when shipping to the buyer—a combination of advantages that must soon drive his Eastern competitor out of the market, and leave alone in his hands a large and profitable business.

For all these reasons there will, for a long time to come, be an immense demand for alfalfa for cattle raising purposes.

The same conditions apply to hog raising, and with equal force. It will doubtless sound strangely to the Eastern farmer to be told that hogs are here fattened for the market on alfalfa hay, but it is nevertheless true, and the meat thus produced is fully equal, if not better than corn-fattened pork. It seems to be as good for hogs as for cattle. It is becoming the rule here, and such hogs command high prices, as "hog cholera" is not known in these mesa regions.

Alfalfa is a perennial plant, and when once sown will last for many years. It is difficult to say how long it is profitable to keep the same field in alfalfa, but there are many instances of land that has borne

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crops of alfalfa for twenty years, and even for a longer period, without showing any signs of depreciation.

The seed is usually sown in February, on land already seeded to wheat, and oats are also frequently sown with the alfalfa in order to act as a shade to the young plants. But quite as good results have been obtained by sowing the alfalfa alone. The seed may also be put in the ground at the end of September. The young plants will soon appear above the ground and will continue to grow, in roots if not in leaf, during the greater part of the winter.

The cost of seeding an acre of land, from an estimate made in the Mesilla Valley with alfalfa is as follows:

Plowing and harrowing	$5.00
Drilling seed	1.25
Making borders for irrigation	2.50
Twenty-five pounds of seed, at 8 cents	2.00
Total	10.75

The annual expense will be:

Cutting, raking, gathering, and stacking 3½ tons, at $1	$3.50
Irrigating six times, at 15 cents	.90
Water per acre	.75
Cleaning lateral ditches	.50
Baling 3½ tons, at $1.35	4.72
Hauling to railroad 3½ tons	3.50
Total	13.87

This makes the cost of the hay in the stack $1.60 per ton and not quite $4 baled and delivered on cars. Hitherto most of the alfalfa has been sold as hay, but much better returns are obtained by feeding it to live stock for raising hogs and dairy produce, which undoubtedly constitute the best products for the farmer. Alfalfa usually gives four cuttings in the year, but with care and plenty of water it would be possible to get five cuttings, yielding altogether 5 or 6 tons of hay. Owing, however, to a somewhat slovenly method of farming and the occasional lack of water, the writer places the average yield in the valley at 3½ tons per acre.

MAKES GOOD PORK.

Wherever alfalfa can be raised, the best as well as the cheapest pork and bacon can be produced, for alfalfa gives growth to the muscle, making the lean meat that is the best and sells the best. And while growing in the alfalfa fields the hogs get the exercise needed for healthy development. Wherever it will grow it may be made a highly profitable crop and one that will get out of the swine industry its biggest possible results.

RANGE GRASSES.

There are about thirteen or fourteen different plants indigenous to New Mexico that, curing on the stalk, without cutting or labor of man, comprise the great bulk of the valuable fattening food for range stock. A short description of each is given below.

The majority of the native, uncultivated forage plants of New Mexico are grasses, and the others, such as sotol and prickly pear, impress one as rather queer stock foods. The grasses of this class belong to two different groups—those which grow in the moist and alkaline soils of the valleys and those which are found on the mesas, and whose only supply of moisture is the little rain that falls during the year. Where

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irrigation is possible the best of all forage plants—alfalfa—can be raised in such great abundance that the cultivation of few other hay or fodder crops is attempted.

Hilaria mutica (Galleta grass).—This grass is found principally upon the high planes on both slopes of the Rocky Mountains. It is also known in localities as "black gramma;" is a perennial grass, spreading by means of thick, scaly, underground stems, the roots of which are very nutritious, and stock seem to relish them.

Paspalum distichum (joint grass).—This grass is also known as "knot grass" in some localities. It is adapted to warm, moist soils of alkaline tendency, and in New Mexico is most abundant on low lands that are flooded occasionally, and upon the ditch banks late in the season. It is cut by the natives, to be fed green to stock before corn has matured. This grass is said to have some medicinal qualities.

Eriochloa punctata (Hamil).—Irrigated but uncultivated fields usually produce an abundant crop of the above-named grass each season. After the corn is "laid by," or during what little rain we have in the summer, this grass appears in the cornfields, along the ditch banks and the fence rows, and makes very rapid growth during the hot days of August and September. It produces an abundance of seed, and will reseed the ground each year. Land once seeded with it would produce a crop of fair hay after a crop of wheat has been taken off, and, so far as judged from an analysis, should be a valuable forage plant.

Panicum crus-galli (barnyard grass).—This rapidly growing annual is widely naturalized over the western and southern parts of the United States. As is indicated by its great geographical range, it has great powers of adaptation to climatic condition and is very variable, two well-marked varieties being recognized. It varies in height from a few inches to 5 feet and over, but the usual height is 3 feet. The natives cut this grass and feed it to their stock while green, before the corn matures. There is a difference of opinion as to the value of this grass as a hay crop. Some think it very valuable, while others think it worthless. It would be excellent to feed with alfalfa, and the two properly mixed would make a first-class combination.

Panicum obtusum (grapevine mesquite).—This is one of the native Southwestern grasses, found generally in the rich, loamy bottoms of the river courses, very rarely appearing on the mesas. It it a perennial which spreads rapidly, grows about a foot high, and produces a rather strict panicle of flowers. Stock seems to relish it. It does not grow tall enough to cut for hay, but would make a very fine pasture grass if supplied with water; its habits of growth and its great vitality would tend to prevent its being tramped out by stock.

Muhlenbergia texana (Texas drop-seed grass).—This is a perennial, growing upon the mesas and the dry rocky hillsides. It is sometimes known as the "grama grass," and is probably as valuable as any of the true grama grasses; it is also called "mesquite grass." This plant rarely exceeds a foot in height, but it is a grass that is much relished by stock on the range. Occasionally, when the summer rains have been heavy, it is cut, cured, and baled along with the grama grasses and others, and makes a very valuable hay.

Lycurus phalaroides.—This is a common grass, and is usually found on the rocky ridges and hills of the plains, and not rarely in the mountains. It has been collected at an altitude in New Mexico of over 6,000 feet above sea level. It grows in bunches under the most favorable conditions to a height of 18 inches. It would only be valuable for stock when fed with something containing much protein and fat.

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Sporobolus airoides (bunch grass).—This is one of the commonest of all the native grasses in the western United States, and is found in all arid portions of the Rocky Mountain region from Montana to Texas and west to California. It is perennial, forming dense tussocks on flat, dry, alkaline plains. While it is of no value as hay, it is considered a good pasture grass in some sections, and it certainly is of great value upon those alkaline "flats," which will support few other kinds of vegetation, since it flourishes in such localities, and stock relish it.

Dr. Rothrock says that this grass and another closely related species (*S. cryptandrus*) furnish a fiber which might be utilized in making paper or cordage.

Bouteloua oligostachya (blue grama).—This is the common grama, and is also known as "mesquite grass" and is frequently mistaken for the "buffalo grass" (*Buchloe dactyloides*), which with it at one time formed the bulk of the pasturage upon the Western plains and ranges. With the increased number of animals upon the ranges these grasses are being somewhat killed out, since they are very rarely allowed to seed, and thus few new plants are produced each season. It is a perennial, growing in small dense clumps. It is not considered a very good grass for hay, but it is frequently cut and cured when standing with other grasses, but as a pasture grass it is probably the best of all native grasses. It is not easily tramped out and requires only a small amount of water. It grows rapidly and cures standing, and stock prefer it to almost any other rough food even when dry.

Bouteloua polystachya (six-weeks grama).—This is a common name applied to two species of the genus Bouteloua, which are quite common and similar in character, and the two usually appear together. Both are annuals, and spring up in the open mesas just after the summer rains, and grow very rapidly, maturing in about six weeks. Under the influence of these grasses, plains that were entirely bare will turn green and become valuable pasture land in a very short time. It is considered a very nutritious grass for stock.

Bouteloua eripoda (woolly jointed grama).—This grass is also known as the "black grama," and forms a large portion of the native forage of this district. It is somewhat different from the other perennial gramas in habit, growing more like the six-weeks gramas. It does not grow in bunches or clumps, but is rather diffuse. It gets the name of "woolly jointed grama" from the fact that the internodes or "joints" of the stems are thickly covered with silvery white hairs. Late in the season the stems become dark colored, and from this gets the name of "black grama." The analysis of this grass indicates that it is not so good a food as most of the other grasses, since it is particularly poor in protein.

Bouteloua curtipundula (tall grama).—The tall grama or "hairy mesquite grass" is perhaps the most widely distributed of any of the grama grasses, being reported from nearly all of the States west of the Mississippi River and from several east of it. It is usually found on rocky hillsides and along the bases of the mountains, though it is not uncommon in the valleys and on the higher parts of the mountain ranges, having a vertical range of three or four thousand feet. It cures as other native grasses do, and is considered a valuable feed by stockmen. Stock of all kinds eat it readily. It is frequently cut with other grasses by those who use and sell wild hay in this Territory. It has been recommended by good authority as an addition to the pasture grasses of Tennessee, and is said to be cultivated to some extent in the Southern States and to be much prized.

Eremochloe kingii Watson.—This is a small grass. It seems to be

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well fitted to the climatic conditions of high, dry, and hot plains. It produces a crop every season, no matter how little rain falls. Its nutritive ratio of 1 to 11.6 is much better than that of corn stover, and indicates that it may be a moderately good food. The plant is small and tough, and stock seem to eat it only when there is nothing else left. Its main value appears to be in the fact that it is almost sure to produce a crop when other grasses fail.

Distichlis spicata (salt grass).—This is the true salt grass (also known as alkaline grass), and it certainly deserves either name, since it forms a thick sod over these marshy, alkaline "flats" and "draws," which are of comparatively frequent occurrence in this Western country. It grows well where alkali covers the surface of the land with a thick, white crust, provided there be sufficient water to supply its needs. It is cut in some localities, making a poor hay, but in this Territory, as far as is known, it is only used for a pasture grass. Animals eat it readily while it is green, but it should not be fed by itself.

A description of a number of other varieties of forage plants might be given if it were not for lack of space, and I will only mention the names of a few others, such as the Millo maize and Kaffir corn, Italian millet, Pearl millet, alfalfa (on which quite an article appears in this book), mesquite, tornillo, prickly pear, and sotol.

I mention these grasses more fully than I would do, because in many instances the newcomer in New Mexico is impressed by the apparently barren stretches of mesa which surround the valleys. He is told that stock raising is one of the principal industries of our Territory, and he immediately wonders where the food of all these cattle, sheep, and horses is obtained. But the dry, barren mesa produces much valuable forage, and, with the increase in numbers of the stock upon the range, the animals have acquired the habit of eating anything in the way of vegetable matter which is at all digestible or nutritious.

BEET SUGAR IN NEW MEXICO.

The pronounced success in beet-sugar production in the Pecos Valley has occasioned widespread popular interest in the cultivation of sugar beets throughout New Mexico.

During the past three years, from beet seed furnished by the Agricultural Department in Washington, under the direction of the College of Agriculture at Las Cruces, the better class of farmers in the Territory have been raising sugar beets with uniform success. The fact is clearly demonstrated that on all the valley lands in New Mexico, with irrigation, may be grown the finest crops of sugar beets of the most satisfactory quality for the manufacture of sugar.

It appears that beets of large size, of small sugar content, may be grown almost anywhere with the ordinary attention given to a crop of corn or potatoes; but special conditions of soil and climate seem to be necessary to produce a crop of beets rich enough in sugar to be profitable for purposes of manufacture of sugar. In determining the presence or absence of these conditions, our Territory has occasion for congratulation in the zeal and good work of the College of Agriculture at Las Cruces.

Throughout the Rio Grande Valley, from El Paso to the Colorado line, results appear to be uniformly satisfactory. In the central portion of the Territory, in the high valley region about Santa Fe, the conditions of soil and climate appear to be specially suited to this crop. Here the uniform temperature, and almost perpetual sunshine during

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the growing season, seems to develop a larger percentage of sugar in the beet than in almost any other section of the United States in which tests have been made. It appears from tests made at the experimental station last year that Santa Fe grown beets weighing over 10 pounds tested over 12 per cent sugar content, and smaller beets of less than 20 ounces contained more than 20 per cent of sugar.

The yield per acre with irrigation appears to be merely a matter of care and skill in cultivation and in handling the crop under our conditions of climate. The tendency in overirrigation is to produce a large beet of small sugar content. On the other hand, on the prevailing sandy clay soil about Santa Fe, from 10 to 12 tons of small beets of large sugar content may be grown with even less water for irrigation than is usually given an average crop of corn. For sugar making the beet most desired should weigh less than 20 ounces and contain more than 15 per cent of sugar; and for the raising of this beet New Mexico has the necessary soil, sunshine, water, and cheap labor to successfully grow in almost any quantity desired. It is not alone in the production of sugar beets of superior quality that New Mexico invites the attention of the sugar-making interest in the country; her railroad facilities for delivering beets at a common point centrally located for the manufacture of sugar in the Territory are all that can be desired. Both at Santa Fe and at Albuquerque may be located sugar factories, convenient to the ample supply of good water, cheap fuel, the best of limestone in unlimited supply for factory use, and reliable local labor. The Rio Grande Valley, and especially in the neighborhood of Santa Fe, has been the home of a native population for many generations accustomed to small truck farming and gardening with irrigation, and are already skilled in the light labor required for the cultivation of the sugar beet.

It is rare indeed that all or so many of the conditions for successful beet sugar production may be found in the same locality.

Nature has indeed been generous in endowing New Mexico in this particular interest.

GYPSUM.

In south Santa Fe County, in the county of San Miguel, and in several other places in New Mexico, are to be found large deposits of this mineral. In Donna Ana County, on the San Augustin Plains, there exists the largest deposit of gypsum known in the world, of an exceedingly pure character. The location of this deposit is unique. The San Augustin Plain is about 150 miles in length from north to south, and from 30 to 60 miles from east to west. Near Whiteoaks, in Lincoln County, in the midst of this plain, is the crater of an ancient volcano, the lava from which has flown in a southerly direction like a stream of water for a distance of 60 or 70 miles, varying in width from one half to 3 miles. At the southern end of this stream of lava there is a small stream of salt water flowing into a salt lake, about 1 mile in width, and 1½ miles in length. At the southern end of this lake the bed of gypsum begins, and extends in a southerly direction down the center of the plain, adjoining what appears to be an ancient river bed, almost without a break for a distance of 50 miles. The gypsum bed varies from 5 to 20 miles in width. It is granulated in character, white as the driven snow, and seems to be piled up on the plain like snowdrifts, requiring no labor for mining or for handling. I can not more accurately describe its appearance than by comparing it to granulated sugar. If you should take granulated sugar in one hand and the gyp-

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sum in the other it would be difficult to tell one from the other by sight or touch. The body of gypsum stands from 10 to 40 feet above the surrounding plain, and the line is as distinctly marked as the sand upon the ocean beach.

CARBONATE AND SULPHATE OF SODA.

Immediately adjoining this extensive deposit of gypsum upon the west, and in what is apparently the bed of an ancient river or lake, exists a deposit of carbonate and sulphate of soda, carrying about 15 per cent of carbonate of soda, 20 per cent of sulphate of soda, 4 per cent of borax, the remainder being mostly moisture and sulphate of lime. This deposit is about 1 mile wide and 5 miles in length. Its depth is unknown. At from 2 to 4 feet below the surface water is encountered, which is largely impregnated with these minerals and with chloride of sodium. Explorations have been made in several places throughout the deposits by driving down tubes to a depth of from 20 to 30 feet without discovering any change in the character of the deposit.

There is also a considerable deposit of carbonate of soda near Manzano, in the county of Valencia, and near Wagon Mound, in the county of Mora.

KAOLIN AND FIRE CLAYS.

These valuable minerals have been found in considerable quantities in several places in the Territory. The most notable deposit of fire clay worked to any considerable extent is situated near Socorro, in Socorro County. There has been a recent discovery of a large deposit of kaolin and fire clays in the suburbs of Santa Fe of superior quality. Efforts are now being made to utilize these clays at the Territorial prison. In the immediate vicinity there is also found a considerable bed of graphite, and it is hoped that in the near future it will be extensively worked.

ALUM.

A large deposit of alum has been opened on the Gila River. It is reported to be of great commercial value, and is now being worked to some extent. With proper railroad facilities these alum beds and the beds of gypsum and soda, heretofore referred to, would become the most productive properties in the Territory.

PRECIOUS STONES.

In describing the mineral resources of New Mexico, the native precious stones are worthy of mention, as they are steadily rising in popular estimation and production.

Traditionally this Territory has been noted as having produced some remarkable gems, and recent developments are proving the older records to have been correct. It is only recently that scientific research and skilled labor have been directed to this purpose. The result is a steady increase of expert prospecting and labor in development, which, though only fairly begun, has resulted in finding many varieties of precious and semiprecious stones.

The estimated production and value of gems up to the year 1890 can be found in the census reports of that year. It is worthy of remark that the amount and the value thereof are understated, the facilities for correct and full information being limited.

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Since that time the annual product has more than doubled, and is still increasing. Diligent prospecting has revealed new deposits, and the industry bids fair at present to become a large item in the economic resources of the Territory.

The gems found in New Mexico, in the order of their value, are emeralds, there being one now cut in Santa Fe which weighs 1 karat and is of fine quality. Many other smaller ones have been found, although no expert search has been made for them thus far. A very recent find, next in value, is a gem resembling the ruby in respect of color, brilliancy, and hardness. Of these, quantities are found frequently associated with peridots and garnets, but differing from the latter in being harder and of a different specific gravity and form of crystallization. The range of color is from a light rose or pink to that of a bright red garnet. Though no very large ones have been found, yet gems cut from those found have sold at $20 to $50 each, while their numbers and merits have made them a decided acquisition to the list of precious stones of New Mexico, which must, when more widely known, create for them a large demand.

The turquoise deposits of the Territory are too well known to require an extended description. It is only necessary to state that while some of these gems have been famed in Europe for centuries, yet in the United States they have never met the appreciation their merits and rank as gems deserve until the last few years; now they are in great demand, having been pronounced by experts equal, if not superior, to the Persian turquoise. There are single gems from Santa Fe County, now in New York, held as high as $4,000, and some in Santa Fe of nearly equal size and quality.

This sudden appreciation has given a stimulus to further research, resulting in finding large turquoise deposits near Silver City, in the Hatchitas and Cow Spring mountains, of great merit. One of the new discoveries is phenomenally large, considering quantity of production, size, and color of stones found in it.

In addition to the above-named are found native euclase; the so-called Montana sapphires, garnets, milk and fire opals, peridots, a great variety of fine agates, besides petrified woods, fit for inlaying, mosaic work, or jewelry. Gold and silver quartz valuable for fine work in jewelry are produced from various mines.

COAL.

Chief among them is that of coal, of which there are large beds of bituminous situated in nearly every county in the Territory, and an extensive body of anthracite coal near Cerrillos, in southern Santa Fe County.

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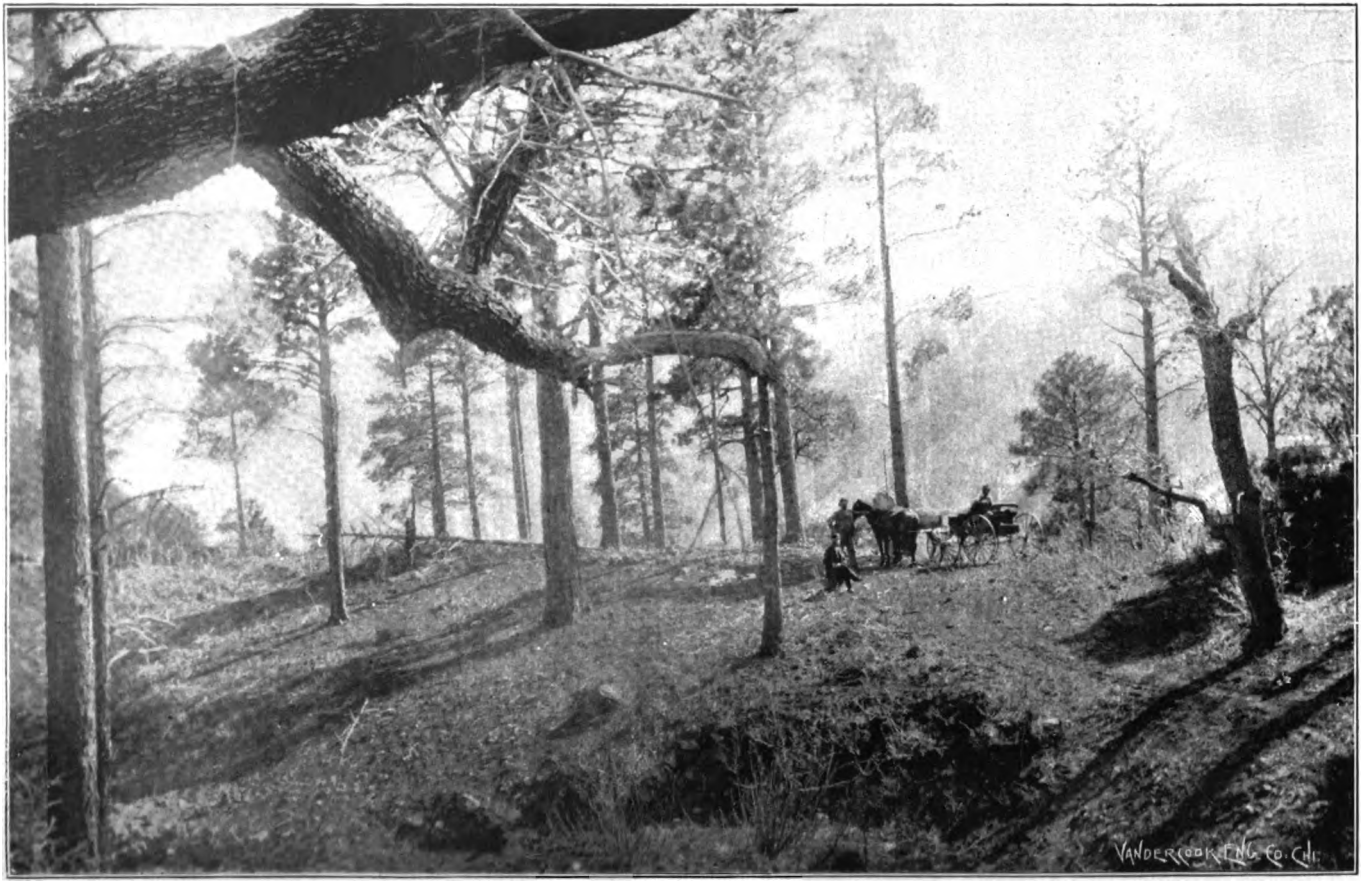

TOP OF DIVIDE, BLACK LAKES.

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FINANCIAL.

Quarterly statement of the Territorial treasurer of New Mexico for the fourth quarter of the forty-seventh fiscal year, beginning November 30, 1896, and ended February 27, 1897.

Title of fund or account.	Balances Nov. 28, 1896.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Feb. 27, 1897.
Interest fund	$5,847.78	$116.04	$2,916.94		$5,960.58	$2,920.18
Licenses	687.91	2,610.03			2,186.59	1,091.35
Penitentiary current-expense fund	3,615.26		1,788.52		2,387.98	3,015.80
Salary fund	8,097.81	1,684.00	1,835.56		7,901.67	3,715.70
Court fund	157.85		55.16			213.01
Miscellaneous fund	7,478.81		2,379.71		5,863.27	3,995.25
Compensation of assessors fund	1,748.01	3,309.61			4,138.64	918.98
Transportation of convicts	388.91		266.12		339.74	315.29
Deficit fund, forty-fourth fiscal year	38.80				38.80	
University of New Mexico	4,221.46	4.30	3,124.52		5,940.00	1,410.28
Agricultural college	397.90	11.18	2,061.42		969.33	1,501.17
New Mexico School of Mines	110.64	2.14	2,010.41		1,000.00	1,123.19
New Mexico Insane Asylum	837.29	2.14	4,455.36		3,443.99	1,886.80
Territorial normal institutes	29.18	9.71				38.89
Branch agricultural experiment station	66.25	18.06			66.25	18.06
Cattle indemnity fund	2,748.40	4,748.23			5,308.27	2,188.36
School fund	236.70				101.80	134.90
Interest on deposits	1,226.19	2,555.69			2,011.17	1,770.71
Territorial institutions, forty-fifth fiscal year		357.13		$357.13		
Deficit fund, forty-second fiscal year	154.60					154.60
Territorial purposes, forty-sixth fiscal year		2,039.06		2,039.06		
Territorial institutions, forty-sixth fiscal year		510.74		510.74		
Deficiency fund, forty-sixth fiscal year	544.63		289.54			834.17
Special court fund	2,534.99				487.19	2,047.80
Normal school, New Mexico (Silver City)	104.16	21.86	1,976.36		1,247.02	855.36
Normal school, New Mexico (Las Vegas)	389.86	21.85	1,976.36		961.29	1,426.78
Territorial purposes, forty-seventh fiscal year		7,492.49		7,492.49		
Territorial institutions, forty-seventh fiscal year		2,185.24		2,185.24		
New Mexico Military Institute	920.46		1,901.49			2,821.95
Territorial purposes, forty-eighth fiscal year	546.99	48,755.71			5,851.92	43,450.78
Territorial institutions, forty-eighth fiscal year	159.52	14,293.29		14,452.81		
Total	43,306.36	90,748.50	27,037.47	27,037.47	56,205.50	77,849.36

RECAPITULATION.

Balances November 28, 1896	$43,306.36
Receipts during quarter	90,748.50
Total to be accounted for	134,054.86
Payments during quarter	56,205.50
Balances February 27, 1897	77,849.36

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$2,929.62
Bank of Commerce, Albuquerque	2,160.43
First National Bank of Las Vegas	11,032.16
First National Bank of Albuquerque	11,539.47
Taos County Bank	5,027.84
New Mexico Savings Bank and Trust Company	2,385.37
San Miguel National Bank	11,784.13
First National Bank of Raton	6,979.48
Bank of Roswell	6,079.94
National Bank of Commerce of New York	17,413.43
Western National Bank of New York	375.94
Cash items	141.55
Total	77,849.36
Funds not available	2,385.37
Funds available	75,463.99
Deduct interest due	17,413.43
Free cash balance	58,050.56

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Quarterly statement of the Territorial treasurer of New Mexico for the first quarter of the forty-eighth fiscal year, beginning March 1, 1897, and ended May 29, 1897.

Title of fund or account.	Balances Mar. 1, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances May 29, 1897.
Interest fund	$2,920.18	$9.19	$13,839.82	.....	$13,930.00	$2,839.19
Licenses	1,091.35	1,970.14	.....	.....	2,000.00	1,061.49
Penitentiary current-expense fund	3,015.80	74.00	15,697.30	.....	10,485.53	8,301.57
Salary fund	3,715.70	2,220.60	10,945.07	.....	8,362.06	8,519.31
Court fund	213.01	.....	390.02	.....	298.80	304.23
Miscellaneous fund	3,995.25	.....	16,709.88	.....	8,478.76	12,226.37
Compensation-of-assessors fund	918.98	1,147.37	.....	.....	1,589.40	476.95
Transportation of convicts	315.29	.....	1,574.98	.....	1,477.37	412.90
University of New Mexico	1,410.28	.05	959.01	.....	.....	2,369.34
Agricultural college	1,501.17	.47	636.04	.....	1,501.17	636.51
New Mexico School of Mines	1,123.19	.03	634.84	.....	1,575.00	183.06
New Mexico Insane Asylum	1,886.80	30,000.03	1,425.78	.....	3,983.46	29,329.15
Territorial normal institutes	38.89	.45	.....	.....	.....	39.34
Branch agricultural experiment station	18.06	.87	.....	.....	.....	18.93
Cattle indemnity fund	2,188.36	2,289.45	.....	.....	3,308.22	1,169.59
School fund	134.90	1,080.00	.....	.....	828.46	386.44
Interest on deposits	1,770.71	359.75	.....	.....	1,825.40	305.06
Territorial institutions, forty-fifth fiscal year	.....	8.47	.....	$8.47	.....	.....
Deficit fund, forty-second fiscal year	154.60	.....	.....	.....	.....	154.60
Territorial purposes, forty-sixth fiscal year	.....	173.89	.....	173.89	.....	.....
Territorial institutions, forty-sixth fiscal year	.....	43.40	.....	43.40	.....	.....
Deficiency fund	834.17	.....	24.70	.....	799.37	59.50
Special court fund	2,047.80	.....	.....	.....	.....	2,047.80
Normal school, New Mexico (Silver City)	855.36	1.09	631.94	.....	855.36	633.03
Normal school, New Mexico (Las Vegas)	1,426.78	1.09	631.94	.....	1,426.70	633.11
Territorial purposes, forty-seventh fiscal year	.....	2,833.92	.....	2,833.92	.....	.....
Territorial institutions, forty-seventh fiscal year	.....	827.90	.....	827.90	.....	.....
New Mexico Military Institute	2,821.95	.....	628.08	.....	2,800.00	650.03
Territorial purposes, forty-eighth fiscal year	43,450.78	15,937.18	.....	56,173.96	3,214.00	.....
Territorial institutions, forty-eighth fiscal year	.....	4,667.86	.....	4,667.86	.....	.....
Capitol rebuilding fund	.....	67,275.00	.....	.....	4,979.13	62,295.87
Bills payable	.....	8,600.00	.....	.....	.....	8,600.00
Total	77,849.36	139,522.20	64,729.40	64,729.40	73,718.19	143,653.37

RECAPITULATION.

Balances March 1, 1897	$77,849.36
Receipts during quarter	139,522.20
Total to be accounted for	217,371.56
Payments during quarter	73,718.19
Balances May 29, 1897	143,653.37

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$88,102.02
Bank of Commerce, Albuquerque	2,176.48
First National Bank of Las Vegas	8,099.82
First National Bank of Albuquerque	8,617.73
Taos County Bank	5,062.78
New Mexico Savings Bank and Trust Company	2,385.37
San Miguel National Bank	8,135.76
First National Bank of Raton	6,030.22
Bank of Roswell	5,121.29
National Bank of Commerce of New York	9,463.61
Western National Bank of New York	375.94
Cash items	82.35
Total	143,653.37
Funds not available	2,385.37
Funds available	141,268.00
Deduct interest due	9,463.61
Free cash balance	131,804.39

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Quarterly statement of the Territorial treasurer of New Mexico for the second quarter of the forty-eighth fiscal year, beginning May 31, 1897, and ended August 28, 1897.

Title of fund or account.	Balances May 31, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Aug. 28, 1897.
Interest fund	$2,839.19	.....	$15,790.52	.....	$17,247.50	$1,382.21
Licenses	1,061.49	$1,585.58	.....	.....	150.00	2,497.07
Penitentiary current expense fund	8,301.57	1,935.25	12,484.24	.....	11,490.63	11,230.43
Salary fund	8,519.31	2,497.65	8,793.44	.....	9,076.60	10,733.80
Court fund	304.23	.....	312.11	.....	53.27	563.07
Miscellaneous fund	12,226.37	.....	13,372.76	.....	9,376.29	16,222.84
Compensation of assessors fund	476.95	3,107.49	.....	.....	2,191.88	1,392.56
Transportation of convicts	412.90	.....	1,266.78	.....	799.69	879.99
University of New Mexico	2,369.34	.....	2,677.25	.....	2,300.00	2,746.59
Agricultural college	636.51	.....	1,784.82	.....	636.51	1,784.82
New Mexico School of Mines	183.06	.....	1,784.82	.....	750.00	1,217.88
New Mexico Insane Asylum	29,329.15	.....	4,015.83	.....	10,614.85	22,730.13
Territorial normal institutes	39.34	.....	.....	.....	.....	39.34
Branch agricultural experiment station	18.93	.....	.....	.....	18.93	.....
Cattle indemnity fund	1,169.59	4,759.26	.....	.....	4,613.62	1,315.23
School fund	386.44	.....	.....	.....	218.80	167.64
Interest on deposits	305.06	418.57	.....	.....	274.72	448.91
Deficit fund, forty-second fiscal year	154.60	.....	.....	.....	.....	154.60
Deficiency fund, forty-sixth fiscal year	59.50	.....	.....	.....	37.02	22.48
Special court fund	2,047.80	.....	.....	.....	752.34	1,295.46
Normal school, New Mexico (Silver City)	633.03	.....	1,784.82	.....	1,204.46	1,213.39
Normal school, New Mexico (Las Vegas)	633.11	.....	1,784.82	.....	633.11	1,784.82
Territorial purposes, forty-seventh fiscal year	.....	3,659.59	.....	$3,659.59	.....	.....
Territorial institutions, forty-seventh fiscal year	.....	1,066.11	.....	1,066.11	.....	.....
New Mexico Military Institute	650.03	.....	1,784.82	.....	.....	2,434.85
Territorial purposes, forty-eighth fiscal year	.....	49,860.26	.....	49,860.26	.....	.....
Territorial institutions, forty-eighth fiscal year	.....	14,551.07	.....	14,551.07	.....	.....
Capitol rebuilding fund	62,295.87	5,850.00	.....	.....	2,079.46	66,066.41
Bills payable	.....	.....	.....	.....	.....	.....
Corporation fund	8,600.00	.....	.....	.....	8,600.00	.....
The legal expense fund	.....	558.00	.....	.....	447.10	110.90
United States annual appropriation for agricultural college	.....	23,000.00	1,500.00	.....	269.75	1,230.25
	.....	.....	.....	.....	.....	23,000.00
Total	143,653.37	112,848.83	69,137.03	69,137.03	83,836.53	172,665.67

RECAPITULATION.

Balances May 31, 1897	$143,653.37
Receipts during quarter	112,848.83
Total to be accounted for	256,502.20
Payments during quarter	83,836.53
Balances August 28, 1897	172,665.67

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$24,909.61
Bank of Commerce, Albuquerque	2,193.02
First National Bank of Las Vegas	29,742.92
First National Bank of Albuquerque	29,740.61
Taos County Bank	9,105.53
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	29,798.45
First National Bank of Raton	14,569.46
Bank of Roswell	14,443.92
National Bank of Commerce of New York	16,578.87
Total	172,665.67
Funds not available	1,583.28
Funds available	171,082.39
Deduct interest due	16,578.87
Free cash balance	154,503.52

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Quarterly statement of the Territorial treasurer of New Mexico for the third quarter of the forty-eighth fiscal year, beginning August 30, 1897, and ended November 27, 1897.

Title of fund or account.	Balances Aug. 30, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Nov. 27, 1897.
Interest fund	$1,382.21	$15,000.00	$3,298.83		$12,840.00	$6,841.04
Licenses	2,497.07	83.77			163.00	2,417.84
Penitentiary current expense fund	11,230.43	4,982.34	2,501.04		11,835.77	6,878.04
Salary fund	10,733.80	2,057.95	1,861.17		9,320.48	5,332.44
Court fund	563.07		64.57		504.15	123.49
Miscellaneous fund	16,222.84	108.50	2,768.36		8,060.40	11,039.30
Compensation of assessors fund	1,392.56	653.00			1,100.61	944.95
Transportation of convicts	879.99		269.30		791.62	357.67
University of New Mexico	2,746.59		544.88		2,500.00	791.47
Agricultural college	1,784.82		363.25			2,418.07
New Mexico School of Mines	1,217.88		363.25		1,200.00	381.13
New Mexico Insane Asylum	22,730.13		817.29		17,730.13	5,817.29
Territorial normal institutes	39.34					39.34
Cattle indemnity fund	1,315.23	4,115.11			3,918.61	1,511.73
School fund	167.64				139.30	28.34
Interest on deposits	448.91	929.14				1,378.05
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	22.48					22.48
Special court fund	1,295.46				44.34	1,251.12
Normal school, New Mexico (Silver City)	1,213.39		363.25		1,213.39	363.25
Normal school, New Mexico (Las Vegas)	1,784.82		363.25		1,784.82	363.25
Territorial purposes, forty-seventh fiscal year		2,196.46		$2,196.46		
Territorial institutions, forty-seventh fiscal year		640.78		640.78		
New Mexico Military Institute	2,434.85		363.25		2,400.00	398.10
Territorial purposes, forty-eighth fiscal year		8,566.81		8,566.81		
Territorial institutions, forty-eighth fiscal year		2,537.64		2,537.64		
Capitol rebuilding fund	66,066.41				4,489.20	61,577.21
Corporation fund	110.90	507.00			520.30	97.60
The legal expense fund	1,230.25				1,002.50	227.75
United States annual appropriation for agricultural college	23,000.00					23,000.00
Territorial purposes, forty-ninth fiscal year		567.48				567.48
Territorial institutions, forty-ninth fiscal year		180.51				180.51
Capitol contingent sinking fund		40.52				40.52
Special tax		101.33				101.33
Sheep sanitary fund		15.38				15.38
Total	172,665.67	43,283.72	13,941.69	13,941.69	81,558.62	134,390.77

RECAPITULATION.

Balances August 30, 1897	$172,665.67
Receipts during quarter	43,283.72
Total to be accounted for	215,949.39
Payments during quarter	81,558.62
Balances November 27, 1897	134,390.77

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$19,705.48
Bank of Commerce, Albuquerque	2,209.86
First National Bank of Las Vegas	22,940.79
First National Bank of Albuquerque	22,950.91
Taos County Bank	8,172.63
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	23,010.20
First National Bank of Raton	12,676.27
Bank of Roswell	12,547.39
National Bank of Commerce of New York	8,593.96
Total	134,390.77
Funds not available	1,583.28
Funds available	132,807.49
Deduct interest due	8,593.96
Free cash balance	124,213.53

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Quarterly statement of the Territorial treasurer of New Mexico, fourth quarter of the forty-eighth fiscal year, beginning November 29, 1897, and ending March 5, 1898.

Title of fund or account.	Balances Nov. 29, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Mar. 5, 1898.
Interest fund	$6,841.04		$22,540.83		$16,877.50	$12,504.37
Licenses	2,417.84	$60.17		$2,344.73	133.28	
Penitentiary current expense fund	6,878.04	2,397.30	14,504.51	3.11	7,882.23	15,894.51
Salary fund	5,332.44	2,226.24	14,816.75		7,018.65	14,456.78
Court fund	123.49		413.26		58.80	477.95
Miscellaneous fund	11,039.30		17,217.35	12.69	7,853.46	20,390.50
Compensation of assessors fund	944.95	4,607.55			4,016.38	1,536.12
Transportation of convicts	357.67		1,784.59		357.67	1,784.59
University of New Mexico	791.47		3,029.76		750.00	3,071.23
Agricultural college	2,148.07		2,019.81		2,148.07	2,019.81
New Mexico School of Mines	381.13		2,019.81		1,280.00	1,120.94
New Mexico Insane Asylum	5,817.29		7,168.05		9,475.82	3,509.52
Territorial normal institutes	39.34			39.34		
Cattle indemnity fund	1,511.73	5,826.64			4,249.57	3,088.80
School fund	28.34				28.34	
Interests on deposits	1,378.05	769.81				2,147.86
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	22.48				19.48	3.00
Special court fund	1,251.12				3.51	1,247.61
Normal school, New Mexico (Silver City)	363.25		2,019.81		1,338.86	1,044.20
Normal school, New Mexico (Las Vegas)	363.25		2,019.81			2,383.06
Territorial purposes, forty-seventh fiscal year		1,998.67		1,998.67		
Territorial institutions, forty-seventh fiscal year		583.66		583.66		
New Mexico Military Institute	398.10		2,019.81			2,417.91
Territorial purposes, forty-eighth fiscal year		6,110.67		6,110.67		
Territorial institutions, forty-eighth fiscal year		1,786.23		1,786.23		
Capitol rebuilding fund	61,577.21				3,225.92	58,351.29
Corporation fund	97.60	769.00			659.00	207.60
The legal expense fund	227.75					227.75
United States annual appropriation for agricultural college	23,000.00				23,000.00	
Territorial purposes, forty-ninth fiscal year	567.48	60,200.60		60,768.08		
Territorial institutions, forty-ninth fiscal year	180.51	17,746.46		17,926.97		
Capitol contingent sinking fund	40.52	4,479.90				4,520.42
Special tax	101.33	10,517.78				10,619.11
Sheep sanitary fund	15.38	586.23				601.61
Total	134,390.77	120,666.91	91,574.15	91,574.15	91,276.54	163,781.14

RECAPITULATION.

Balances November 29, 1897	$134,390.77
Receipts during quarter	120,666.91
Total to be accounted for	255,057.68
Payments during quarter	91,276.54
Balances March 5, 1898	163,781.14

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$14,266.77
Bank of Commerce, Albuquerque	2,226.84
First National Bank of Las Vegas	29,503.89
First National Bank of Albuquerque	29,490.28
Taos County Bank	9,734.07
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	29,476.70
First National Bank of Raton	14,772.47
The Bank of Roswell	14,641.71
National Bank of Commerce of New York	18,085.13
Total	163,781.14
Funds not available	1,583.28
Funds available	162,197.86
Deduct interest due	18,085.13
Free cash balance	144,112.73

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Quarterly statement of the Territorial treasurer of New Mexico, first quarter of the forty-ninth fiscal year, beginning March 7, 1898, and ending May 28, 1898.

Title of fund or account.	Balances Mar. 7, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances May 28, 1898.
Interest fund	$12,504.37		$5,187.26		$12,500.00	$5,191.63
Licenses		$3.07				3.07
Penitentiary current expense fund	15,894.51	1,901.49	3,414.71		6,591.60	14,619.11
Salary fund	14,456.78	2,241.10	2,886.95		8,284.05	11,300.78
Court fund	477.95		96.12		92.00	482.07
Miscellaneous fund	20,390.50		4,021.81		10,186.94	14,225.37
Compensation of assessors fund	1,536.12	1,046.35			1,528.52	1,053.95
Transportation of convicts	1,784.59		413.88		1,774.44	424.03
University of New Mexico	3,071.23		719.11		3,000.00	790.34
Agricultural college	2,019.81		479.40		2,019.81	479.40
New Mexico School of Mines	1,120.94		479.40		1,000.00	600.34
New Mexico Insane Asylum	3,509.52		1,600.32		3,509.52	1,600.32
Cattle indemnity fund	3,088.80	2,223.49			4,470.99	841.30
Interests on deposits	2,147.86	822.80			500.00	2,470.66
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	3.00				3.00	
Special court fund	1,247.61					1,247.61
Normal school, New Mexico (Silver City)	1,044.20		479.40		1,044.20	479.40
Normal school, New Mexico (Las Vegas)	2,383.06		479.40		2,383.06	479.40
Territorial purposes, forty-seventh fiscal year		1,048.31		$1,048.31		
Territorial institutions, forty-seventh fiscal year		305.47		305.47		
New Mexico Military Institute	2,417.91		479.40		2,400.00	497.31
Territorial purposes, forty-eighth fiscal year		2,900.57		2,900.57		
Territorial institutions, forty-eighth fiscal year		846.21		846.21		
Capitol rebuilding fund	58,351.29				5,027.29	53,324.00
Corporation fund	207.60	1,021.00			588.16	640.44
The legal expense fund	227.75					227.75
Territorial purposes, forty-ninth fiscal year		12,071.85		12,071.85		
Territorial institutions, forty-ninth fiscal year		3,564.75		3,564.75		
Capitol contingent sinking fund	4,520.42	856.72				5,377.14
Special tax	10,619.11	2,139.63			9,377.64	3,381.10
Sheep sanitary fund	601.61	264.10				865.71
Compilation fund		161.50				161.50
Total	163,781.14	33,418.41	20,737.16	20,737.16	76,281.22	120,918.33

RECAPITULATION.

Balances March 7, 1898	$163,781.14
Receipts during quarter	33,418.41
Total to be accounted for	197,199.55
Payments during quarter	76,281.22
Balances May 28, 1898	120,918.33

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$1,886.47
Bank of Commerce, Albuquerque	2,243.38
First National Bank of Las Vegas	20,683.20
First National Bank of Albuquerque	20,670.95
Taos County Bank	7,100.09
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	20,659.45
First National Bank of Raton	10,070.94
The Bank of Roswell	10,040.75
National Bank of Commerce of New York	25,979.82
Total	120,918.33
Funds not available	1,583.28
Funds available	119,335.05
Deduct interest due	25,979.82
Free cash balance	93,355.23

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Assessment of property for taxes for the year 1897 in the various counties in the Territory of New Mexico and the arithmetical product of taxes for the forty-ninth fiscal year.

County.	Assessed value subject to tax.	Territorial purposes.	Territorial institutions.	Special tax.	Capitol contingent fund.	Cattle indemnity.	Sheep sanitary.
Bernalillo	$7,395,184.00	$51,766.29	$15,160.29	$9,243.98	$3,697.59	$7.74	$217.76
Chaves	1,475,829.00	10,330.81	3,025.47	1,844.78	737.91	704.64	131.93
Colfax	2,722,180.00	19,055.26	5,580.46	3,402.72	1,361.09	302.09	81.54
Doña Ana	2,446,692.85	17,126.85	5,015.72	3,058.37	1,223.35	60.82	26.87
Eddy	1,113,075.00	7,792.99	2,280.96	1,391.01	559.79	89.13	75.57
Grant	3,468,236.45	24,277.65	7,109.88	4,335.29	1,734.11	1,040.47	31.11
Guadaloupe	420,558.00	2,943.84	862.12	525.67	210.26	51.75	219.60
Lincoln	1,413,832.00	9,898.26	2,898.65	1,767.48	707.46	862.65	124.24
Mora	966,135.60	6,776.94	2,420.33	1,210.16	484.06	83.06	107.18
Rio Arriba	800,222.00	5,601.55	1,640.45	1,000.27	400.11	19.50	179.25
San Juan	729,310.00	5,105.17	1,495.08	911.64	364.65	13.21	29.78
San Miguel	4,209,564.00	29,466.94	8,628.56	5,262.05	2,104.45	67.95	285.52
Santa Fe	1,851,701.00	12,961.17	3,794.62	2,317.27	927.62	23.37	72.19
Sierra	1,055,072.30	7,385.52	2,162.90	1,318.84	527.53	164.63	21.81
Socorro	4,611,482.00	32,280.40	9,453.52	5,764.36	2,305.75	663.93	167.61
Taos	953,689.00	6,675.82	2,002.75	1,144.43	476.84	157.72	107.60
Union	1,174,850.00	8,223.95	2,937.12	1,468.56	587.42	170.29	354.37
Valencia	2,668,506.58	18,680.10	5,470.79	3,335.36	1,334.63	16.43	69.10

Total assessed value of all kinds of property $41,546,498.47
Deduct exemptions to heads of families and reductions on values made by board of county commissioners and Territorial board of equalization 2,068,374.29

Balance of property valuation subject to tax 39,478,119.18

For Territorial purposes (section 2, chapter 72, Laws of 1897), 7 mills on the dollar.
For Territorial institutions (section 5, chapter 72, Laws of 1897), $2\frac{1}{10}$ of one mill on the dollar.
For special tax for the forty-ninth fiscal year (section 7, chapter 72, Laws of 1897), $1\frac{1}{4}$ mills on the dollar.
For capitol contingent sinking fund (section 3, chapter 45, Laws of 1887), $\frac{1}{4}$ mill on the dollar.
For cattle indemnity fund, as provided by section 23, chapter 106, Laws of 1889.
For the support of the public schools a levy is made by me in conformity with "An act to establish public schools in the Territory," etc., approved February 12, 1891, of $2\frac{4}{10}$ of one mill on the dollar upon all the taxable property in the Territory, to be collected and paid in to the different county treasuries, as provided by law.

COUNTY FINANCES.

I have made stringent efforts to ascertain the amount of indebtedness existing in the various counties of the Territory, and the present financial condition thereof, but regret to say that I have been unable to get this information from all of the counties. Following, I give such reports as I have succeeded in obtaining.

COLFAX COUNTY.

General county fund:	
Receipts	$13,372.32
Expenditures	10,071.46
Balance on hand	3,300.86
Court fund:	
Receipts	5,834.84
Expenditures	4,601.50
Balance on hand	1,233.34
Bounty fund:	
Receipts	1,502.69
Expenditures	1,368.78
Balance on hand	133.91
General interest fund:	
Receipts	7,815.87
Expenditures	4,854.11
Balance on hand	2,961.76

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General schools fund:	
Receipts	$14,496.71
Expenditures	11,461.44
Balance on hand	3,035.27
Roads and bridge fund:	
Receipts	1,499.73
Expenditures	1,403.59
Balance on hand	96.14

FINANCIAL STATEMENT OF BERNALILLO COUNTY.

Total indebtedness of said county up to and including June 30, 1898, amounts to $353,459.23, composed of the following amounts, viz:

Bonded debt.

Date issued.	What purpose issued.	Rate of interest.	Amount issued.
		Per cent.	
1884	Funding indebtedness	6	$25,000.00
1885	Court-house and jail	7	92,000.00
July 1, 1889	Funding indebtedness	6	40,000.00
Do	Current expenses	6	40,000.00
July 1, 1891	Funding indebtedness	5 1/2	17,000.00
Nov. 16, 1892	Current expenses	6	7,000.00
Do	Bridge building	6	30,000.00
July 1, 1895	Funding indebtedness	6	64,900.00
July 1, 1897	do	6	50,300.00
			366,200.00
	Less bonds of 1884 and 1885 paid		18,000.00
	Total		348,200.00
Approved accounts, quarter ending—			
September 30, 1897, 50 per cent unpaid			2,568.44
March 31, 1898, 40 per cent unpaid			2,690.79
Warrants outstanding			
Judgments against the county			
County certificates of indebtedness			
Floating indebtedness			
Total indebtedness			353,459.23
Total assessed valuation, real and personal, equalized for the year 1897			7,395,184.00

FINANCIAL CONDITION OF CHAVES COUNTY.

Bonded indebtedness.

Court-house and jail bonds outstanding and drawing 6 per cent	$30,000.00
Lincoln County indebtedness bonds outstanding and drawing 6 per cent	13,000.00
Current expense bonds outstanding and drawing 6 per cent	7,000.00
Total	50,000.00
General fund, balance on hand	6,338.92
Road and bridge fund, balance on hand	685.71
School fund, balance on hand	1,889.40
Bonded interest fund, balance on hand	804.85
District court fund, balance on hand for the fiscal year ending June 30, 1898	365.45

FINANCIAL STATEMENT OF DONNA ANA COUNTY.

Bonds issued:		
November 1, 1883, court-house and jail bonds, 6 per cent	$3,000.00	
July 1, 1889, current expense bonds, 6 per cent	15,000.00	
July 1, 1891, current expense bonds, 6 per cent	7,000.00	
January 1, 1885, funding bonds, 6 per cent	10,900.00	
July 1, 1889, funding bonds, 6 per cent	32,000.00	
July 1, 1895, funding bonds, 6 per cent	23,100.00	
August 2, 1897, funding bonds, 6 per cent	7,621.15	
Judgments	3,144.13	
		101,765.28

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By credits:		
Cash on hand court-house bonds sinking fund	$3,000.00	
Cash on hand funding bonds sinking fund, issue of 1885	5,921.95	
		$8,921.95
		92,843.33
Floating outstanding indebtedness, 1896		587.92
Floating outstanding indebtedness, 1897		3,935.86

FINANCIAL STATEMENT OF EDDY COUNTY.

The chairman of the board of county commissioners of the county of Eddy writes that—

the financial condition of that county is in better shape than it has been for years.

One year ago, under the laws of the last legislature, we bonded the Territorial indebtedness (not before bonded), which amounts to $23,925.84.

Indebtedness for court-house, jail bonds, bridge bonds, and Lincoln County indebtedness, amounting to $50,000, running from twenty to thirty years.

Since the issuance of our last bonds, we have been paying the court expenses of the county in full.

FINANCIAL STATEMENT OF GRANT COUNTY.

Funding bonds 1882, at 6 per cent	$100
Railroad bonds 1883, at 7 per cent	57,000
Funding bonds 1885, at 6 per cent	18,500
Funding and refunding bonds 1889, at 6 per cent	142,500
	218,100
Unfunded indebtedness, more or less	20,000
	238,100

AUDITOR'S OFFICE, TERRITORY OF NEW MEXICO,
Santa Fe, N. Mex., August 11, 1898.

SIR: In reply to your letter of the 6th instant, I beg to submit the following statement of the taxable property for 1897:

TAX RATE FOR 1897.

Tax rate for 1897 on assessed valuation of property.

	Mills.
For Territorial purposes	7
For Territorial institutions	2.05
Special tax for the forty-ninth fiscal year	1.25
Capitol contingent bonds	.50

Territorial expenditures for the forty-ninth fiscal year, according to the tax roll of 1897.

For Territorial purposes	$100,055.60
For Territorial institutions	31,491.67
Appropriations	193,080.00

I regret that I can not give you a fuller report at this time, but owing to the failure of the counties to respond, I can not, and hope this will answer.

Very respectfully,

MARCELINO GARCIA, *Territorial Auditor.*

The GOVERNOR OF NEW MEXICO,
Sante Fe, N. Mex.

BOARD OF EQUALIZATION.

TERRITORIAL VALUATIONS FOR 1898.

Lands and real estate.—All workable coal lands situated not more than 10 miles from any operated railroad shall be assessed at $20 per acre; more than 10 miles from line of railroad, $10 per acre; merchantable timber lands not more than 15 miles from line of railroad, $3.50 per acre; more than 15 miles from railroad, $1.50 per acre. Each quar

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section or fractional part thereof of land with permanent water, suitable for grazing only, $1.25 per acre; grazing lands without water, 30 cents per acre; all other lands and real estate not otherwise specified, at actual cash value, but under no circumstances shall they be assessed for less than other similar or adjacent property.

Live stock.—The board placed the assessable values upon live stock as follows: Stock horses, $5 per head; cow ponies, $10 per head; American horses, $30 per head; American mules, $40 per head; Mexican mules, $10 per head; burros, $3 per head; stock cattle south of the thirty-fifth parallel, $11 per head; stock cattle north of the thirty-fifth parallel, $12 per head; improved sheep within the Territory of New Mexico, $1.50 per head; the unimproved sheep within the Territory of New Mexico, at $1 per head; graded Angora goats, that produce a fleece that is clipped for market, shall be assessed at the rate of $2 per head; common goats that produce no clip or fleece shall be assessed at 50 cents per head; improved cattle that are suitable for dairy purposes only shall be assessed at $25 per head.

BANKS.

The statements of the different banks throughout the Territory show the following business for the fiscal year ending June 30, 1898:

First National Bank of Albuquerque	$1,851,461.00
First National Bank of Las Vegas	603,361.91
First National Bank of Santa Fe	643,741.98
First National Bank, Raton	203,741.98
San Miguel National Bank, Las Vegas	642,778.30
Las Vegas Savings Bank	98,325.68
Silver City National Bank	234,354.29
The Bank of Commerce, Albuquerque	370,023.24
Sierra County Bank, Hillsboro	113,409.65
Bank of Roswell, Roswell	291,258.06
Bank of Deming, Deming	168,916.67
Exchange Bank of White Oaks	93,277.78
George D. Bowman & Son, Las Cruces	68,095.62
Andrew Morton & Co., Springer	58,000.00
Taos County Bank, Taos	72,410.34

INTERNAL REVENUE SERVICE,
DISTRICT OF NEW MEXICO, COLLECTOR'S OFFICE,
Santa Fe, N. Mex., September 22, 1898.

DEAR SIR: In response to yours of the 10th instant, I have the honor to submit herewith a statement of the collections for the district of New Mexico from the various sources enumerated below, viz:

Wholesale liquor dealers	$991.67
Wholesale dealers in malt liquors	1,487.53
Retail liquor dealers	13,370.78
Retail dealers in malt liquors	281.68
Retail dealers in oleomargarine	224.00
Brewers (more than 500 barrels)	100.00
Brewers (less than 500 barrels)	50.00
Rectifiers (less than 500 barrels)	83.34
Other stamps—	
Beer stamps	4,320.88
Cigar and cigarette stamps	1,256.25
Tobacco stamps	54.00
Tax-paid and spirit stamps	713.46
Adhesive stamps	2,695.45
Penalties and miscellaneous collections	717.10
Total	26,346.14

Very respectfully,

A. L. MORRISON.

Hon. M. A. OTERO, *Sante Fe, N. Mex.*

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REPORT OF THE TERRITORIAL COAL-OIL INSPECTOR.

SIR: As per your request of recent date, herewith please find statement showing the number of gallons of coal oil or kerosene shipped into New Mexico from June 30, 1897, up to and including June 30, 1898.

	Gallons.
Las Vegas station	75,036
Santa Fe station	28,915
Albuquerque station	126,988
Socorro station	35,084
Las Cruces station	24,922
Lake Valley station	7,813
Deming station	31,628
Silver City station	50,728
Eddy station	25,208
All other sources	105,623
Total	511,945

Very respectfully,

JOHN S. CLARK,
Coal-Oil Inspector New Mexico.

Governor MIGUEL A. OTERO,
Santa Fe, N. Mex.

EDUCATIONAL.

SANTA FE, N. MEX., *August 1, 1898.*

SIR: I have the honor to acknowledge receipt of your favor of recent date asking for information as to the condition of the schools of this Territory up to June 30, 1898. Complying with your request, I have to say that since the date of the last report submitted by this office there has been marked progress in educational matters throughout the Territory. The public school institution has been in operation long enough to show its beneficial effects. The accompanying statement will give an insight as to the amount of work done in each county. Some attention has been given to the building of new school houses, particularly in the larger cities. In a great many of the country districts old buildings have been enlarged and improved. So far as the quality and quantity of the work of the schools has been affected by the character of the teachers, there has been great improvement. This is due in a great measure to the normal training which many of the present teachers have received during the last few years.

The adoption of a uniform series of text-books for the public schools has brought about very satisfactory results.

The history of the free public schools in New Mexico during the last few years is such as to afford gratification and pride to every citizen of the Territory. As the number of primary or elementary schools is the gauge by which the progress of a State must be measured, New Mexico in this particular has achieved much more than the greatest friends of our educational system ever dared to hope. It is not only in the district schools that New Mexico can present itself in a favorable light. Our city schools are second to none in the country.

Our Territorial institutions of learning are in a very flourishing condition, as will appear from an examination of the accompanying tables.

Besides our public schools, private interest has not been lacking. In addition to the public schools, there are in New Mexico many private and sectarian schools which have aided materially in the educational advancement of the Territory.

In conclusion, I desire to dispel the false ideas current in reference to the illiteracy and the inability to speak English with which the inhabitants of the Territory are wrongfully charged.

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ILLITERACY.

Total illiterate population 10 years of age and over, by States and Territories, 1890.

	Per cent.		Per cent.
Maine	5.46	Missouri	9.09
New Hampshire	6.81	North Dakota	5.98
Vermont	6.69	South Dakota	4.22
Massachusetts	6.22	Nebraska	3.11
Rhode Island	9.76	Kansas	3.99
Connecticut	5.28	Kentucky	21.65
New York	5.53	Tennessee	26.64
New Jersey	6.50	Alabama	41
Pennsylvania	6.78	Mississippi	39.98
Delaware	14.31	Louisiana	45.83
Maryland	15.70	Texas	19.74
District of Columbia	13.20	Oklahoma	5.37
Virginia	30.18	Arkansas	26.65
West Virginia	14.41	Montana	5.46
North Carolina	35.71	Wyoming	3.41
South Carolina	44.95	Colorado	5.24
Georgia	39.83	New Mexico	44.49
Florida	27.79	Arizona	23.41
Ohio	5.24	Utah	5.59
Indiana	6.32	Nevada	12.81
Illinois	5.25	Idaho	5.14
Michigan	5.92	Washington	4.27
Wisconsin	5.73	Oregon	4.13
Minnesota	6.03	California	7.67
Iowa	3.61		

The large percentage, 44.49, given by the census report of 1890, is to a great extent due to the fact that in 1890 there were still living many of the original inhabitants who were living in the Territory before it became a part of the United States. It can be safely estimated that at least 22 per cent of the 44 per cent can be ascribed to them. This class of pioneers is fast disappearing and the new generation, without exception, owing to our excellent school system, is enjoying all the benefits of modern education, and this element has made excellent use of the facilities afforded during the last seven years, as a total enrollment of 151,000 in the district schools alone proves. This enrollment gives an average of 50 per cent of the total school census of 316,000, and considering that by the laws of the Territory this census embraces all persons of the ages between 6 and 21 years, but that the majority attending school is of 8 to 16 years; and further considering the fact that at least 70 per cent of the 70,000 new arrivals are above 20 years, it may be safely asserted that there is not a child in the Territory, between the ages of 8 and 16, who fails to attend school. Taking 50,000 as the number of persons of school age, 90 per cent is a conservative estimate of those able to read and write. Taking as a basis the census of 1890, with 153,000 inhabitants, the Territory has had, during the last seven years, an increase of 90,000, for the actual number of its inhabitants is to-day 243,000.

Of this increase of 90,000, 20,000 may be assigned to births and 70,000 to immigrants from other States of the Union. Of these last 70,000 at least 60,000 are able to read and write, which leaves only 14 per cent of illiteracy among the new arrivals.

Deducting the increase of 90,000 from the total of population of 243,000 leaves 153,000, of which 50,000 are of school age and 103,000 above 21 years of age.

Of the older inhabitants there were, according to the last census, in round numbers, 55 per cent able to read and write; but taking into consideration the deaths of persons above school age occurring during this period of seven years, and the increase of this class by those who, during their minority, attend school, this percentage can now be conservatively estimated at 60 per cent.

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Consequently, the matter of persons able to read and write in New Mexico can be represented by the following figures:

	Number.	Per cent.
New arrivals, 1890–1897	70,000	86
Persons of school age, 6 to 21 years	50,000	90
Persons above school age	103,000	60
	223,000	236
Persons below school age	20,000	.....
Total	243,000	.....

Or an average, in round numbers, of 79 per cent able to read and write, leaving only 21 per cent of illiteracy.

ENGLISH.

In reference to the knowledge of the English language, the following facts will explain themselves and dispel the idea that English only to a slight extent is spoken in the Territory.

The census of 1890 gives 61.11 as the percentage of those unable to speak English; the same factors proving the decrease of illiteracy also prove the increase of the English language.

First, there is the death rate of the original settlers; second, an immigration of 70,000, all of which with hardly an exception speak English and are of Anglo-Saxon descent; third, a total enrollment embracing seven years of 151,000 in 550 schools, taught by 745 teachers each and everyone speaking and teaching English.

From the above facts a conservative estimate can be made proving that to-day the percentage of the inhabitants of the Territory unable to speak English will not at the utmost exceed 15 per cent.

Very respectfully, yours,

MANUEL C. DE BACA,
Superintendent of Public Instructi

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Annual report of the superintendent of public instruction for the year 1897.

DISTRICT SCHOOLS.

Counties.	Number of districts.	Teachers.			Enrollment.		
		Males.	Females.	Total.	Males.	Females.	Total.
Bernalillo	50	39	25	64	1,607	1,703	3,310
Chaves	11	2	16	18	276	292	568
Colfax	26	20	20	40	570	684	1,254
Doña Ana	29	7	21	28	685	513	1,198
Eddy	13	8	9	17	261	292	553
Grant	30	11	32	43	657	501	1,158
Guadalupe	13	13	.....	13	313	231	544
Lincoln *a*	35	17	10	27	388	307	695
Mora	27	7	5	12	399	240	639
Rio Arriba	22	22	3	25	521	251	772
San Juan	19	8	10	18	307	204	511
San Miguel	93	57	32	89	2,092	1,425	3,517
Santa Fe	27	18	5	33	715	414	1,129
Sierra	17	10	14	24	270	205	495
Socorro *b*	49	28	14	42	1,052	764	1,816
Taos *c*	32	15	3	18	456	192	648
Union	18	8	4	12	236	167	403
Valencia	21	18	5	23	854	620	1,474
Total	523	308	238	546	11,659	9,015	20,674
Total, 1896	562	313	215	528	11,875	8,316	20,191
Totals, 1891, 1892, 1893, 1894 and 1895	.....	1,677	988	2,665	65,517	43,945	109,462
Grand total	.....	2,298	1,441	3,739	89,051	61,276	150,327

a Difference not accounted for in expenditures, $247.96.
b In total expenditures are included $2,329.29, amount overdrawn.
c Total expenditures include $172.86, over draft.

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Annual report of the superintendent of public instruction for the year 1897—Continued.

DISTRICT SCHOOLS—Continued.

Counties.	Average daily attendance.			Number of scholars between the ages of 5 and 21 years.			Number of schools.	Months taught.
	Males.	Females.	Total.	Males.	Females.	Total.		
Bernalillo	1,072	902	1,974	3,954	3,365	7,319	58	4
Chaves	217	244	461	508	474	984	15	5
Colfax	382	332	714	1,144	133	1,277	29	4
Doña Ana	418	280	698	1,925	1,667	3,592	24	4
Eddy	1,653	1,962	3,615	389	462	851	14	4
Grant	434	320	754	1,558	1,299	2,857	30	5
Guadalupe	264	197	461	641	639	1,280	13	3
Lincoln *a*	230	219	449	1,025	687	1,712	21	3
Mora	268	164	432	1,512	1,390	2,902	13	4
Rio Arriba	366	132	498	498	253	741	24	3
San Juan	199	148	347	446	351	797	18	3
San Miguel	1,360	958	2,318	3,825	3,110	6,935	75	4
Santa Fe	506	295	801	1,380	1,226	2,606	31	3
Sierra	155	114	269	525	420	945	13	4
Socorro *b*	683	523	1,206	2,079	1,652	3,731	42	4
Taos *c*	273	118	391	899	774	1,673	15	4
Union	165	114	279	636	497	1,132	10	4
Valencia	695	483	1,178	1,159	1,402	2,561	24	4
Total	9,341	7,504	16,845	24,102	19,801	43,903	469	4
Total, 1896	8,139	5,679	13,818	23,962	20,875	44,837	472	4
Totals, 1891, 1892, 1893, 1894, and 1895	45,284	29,872	75,156	124,127	103,749	227,876	2,414	4
Grand total	62,764	43,055	105,819	171,191	144,425	316,616	3,355	4

Counties.	Receipts.			
	Balance due Dec. 1, 1897.	From county school fund.	Poll tax, fines, etc.	Total.
Bernalillo	$10,148.53	$11,265.15	$979.90	$22,393.58
Chaves	1,560.50	3,039.61	1,704.04	6,304.15
Colfax	2,789.92	7,209.84	171.35	10,171.11
Donna Ana	2,138.84	4,484.00	1,423.34	8,046.18
Eddy	367.41	3,345.57	1,214.14	4,927.42
Grant	2,214.88	14,799.55	4,100.90	21,115.23
Guadaloupe	1,269.07	370.86	590.77	2,230.70
Lincoln *a*	1,586.37	2,616.75	1,584.15	5,787.27
Mora	1,258.57	888.74	285.40	2,432.71
Rio Arriba	2,996.31	2,512.45	83.60	5,592.36
San Juan	627.12	165.27	863.63	1,656.12
San Miguel	6,704.94	4,881.62	5,444.30	17,030.86
Santa Fe	2,583.04	3,156.10	1,820.20	7,559.34
Sierra	1,385.84	1,834.20	1,271.76	4,491.80
Socorro *b*	5,832.90	2,446.00	3,459.32	11,738.22
Taos *c*	1,491.32	2,076.06	112.10	3,679.48
Union	702.01	1,323.00	4,350.01	6,375.02
Valencia	1,692.91	649.50	617.91	2,960.32
Total	47,350.48	67,064.27	30,076.82	144,491.57
Total, 1896	44,926.45	88,559.82	49,349.49	182,835.76
Totals, 1891, 1892, 1893, 1894, and 1895	288,518.90	583,450.22	360,317.43	1,032,286.55
Grand total	380,795.83	538,074.31	439,743.74	1,359,613.88

a Difference not accounted for in expenditures, $247.96.
b In total expenditures are included $2,329.29, amount overdrawn.
c Total expenditures include $172.86, over draft.

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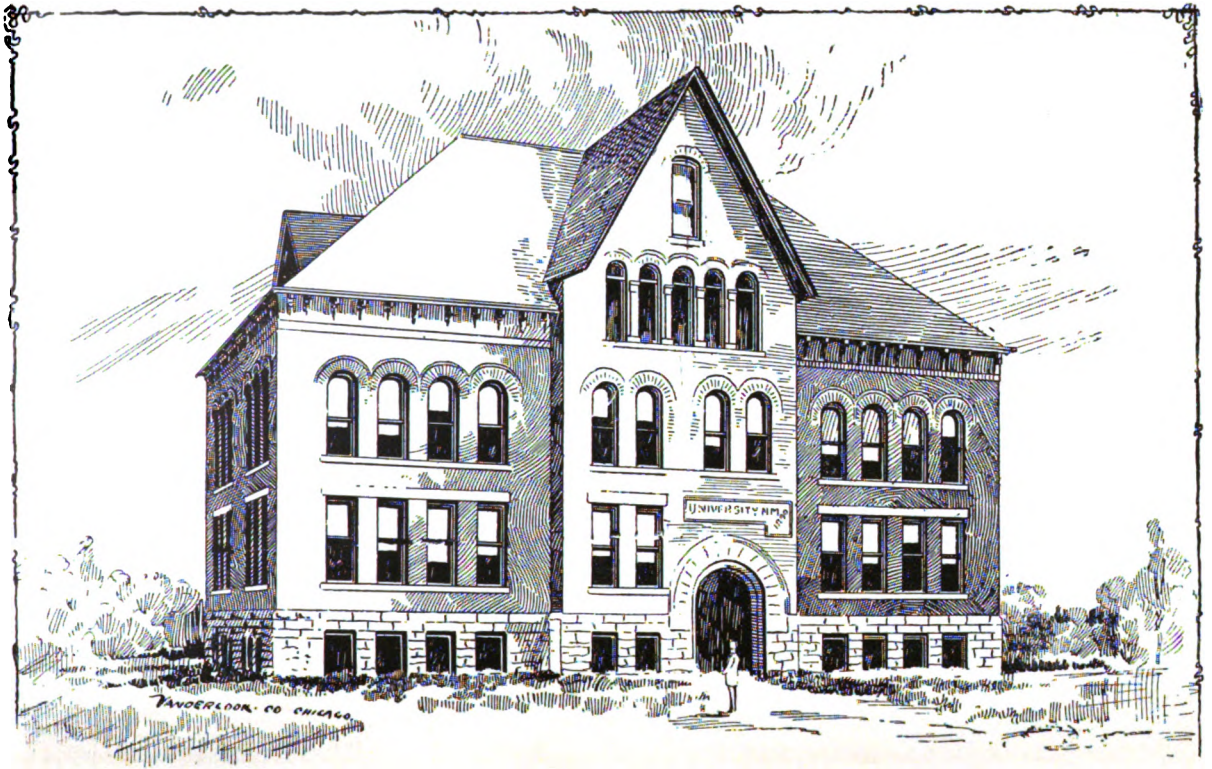

UNIVERSITY OF NEW MEXICO, ALBUQUERQUE.

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Annual report of the superintendent of public instruction for the year 1897—Continued.

DISTRICT SCHOOLS—Continued.

Counties.	Expenditures.				
	Teachers' wages.	Rent, fuel, etc.	School-houses and grounds.	On hand.	Total.
Bernalillo	$11,126.21	$1,683.53	$103.26	$9,490.58	$22,393.58
Chaves	4,537.84	306.28	477.51	982.52	6,304.15
Colfax	6,024.65	373.56	581.47	3,191.43	10,171.11
Donna Ana	4,322.24	628.61	243.68	2,851.65	8,046.18
Eddy	3,732.76	477.24	150.25	567.17	4,927.42
Grant	12,618.27	270.75	550.46	7,923.71	21,363.19
Guadaloupe	1,051.42	121.55	.90	1,056.83	2,230.70
Lincoln *a*	4,158.66	271.61	298.31	1,058.49	5,787.27
Mora	1,355.97	262.37	.....	874.47	2,492.71
Rio Arriba	2,027.75	608.70	.....	2,955.91	5,592.36
San Juan	957.11	42.69	237.95	418.17	1,656.12
San Miguel	13,208.95	667.42	1,528.99	1,605.59	17,030.95
Santa Fe	3,756.30	1,091.36	.....	2,711.68	7,559.34
Sierra	2,787.50	265.76	121.00	1,367.54	4,491.80
Socorro *b*	9,003.75	1,287.94	1,794.14	1,981.68	14,067.51
Taos *c*	2,094.14	121.15	465.47	1,171.58	3,852.34
Union	2,579.70	407.36	1,145.84	2,242.12	6,375.02
Valencia	1,965.87	129.00	.....	855.45	2,950.32
Total	87,248.99	8,987.08	7,699.23	43,306.38	147,241.68
Total, 1896	107,419.60	13,390.46	12,691.93	47,354.94	180,847.93
Totals, 1891, 1892, 1893, 1894, and 1895	452,893.13	104,508.51	121,737.64	353,147.27	1,032,286.55
Grand total	647,552.72	126,885.55	142,128.80	443,808.59	1,360,376.16

a Difference not accounted for in expenditures, $247.96.
b In total expenditures are included $2,329.29, amount overdrawn.
c Total expenditures include $172.86, over draft.

Overdrawn, total, $2,750.11.

TERRITORIAL INSTITUTIONS.

Name.	Number of schools.	Number of months taught.	Number of teachers.	Enrollment.	Total daily average.	Total receipts. *a*	Total expenditures. *a*	Total value of school property.	Total amount of salary paid to teachers.	Total amount paid for rent, fuel, lights, and miscellaneous.
University of New Mexico	1	9	7	80	70	$11,169.50	$10,989.38	$37,025.43	$8,134.00	$2,855.38
New Mexico College of Agriculture and Mechanic Arts	1	10	17	190	175	57,618.63	43,502.20	64,500.00	20,161.38	2,334.82
New Mexico School of Mines	1	9	2	27	25	4,961.59	5,769.79	45,000.00	3,300.00	2,469.79
Normal School of New Mexico, at Silver City	1	.....	.....	.....	.....	10,503.01	9,696.91	20,000.00	3,700.05	5,996.91
Total	4	28	26	297	270	84,272.73	69,958.28	166,525.43	35,295.43	13,656.90

a Only give actual receipts and expenditures.

NOTE.—The Deaf and Dumb Asylum has been closed for lack of funds.

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Annual report of the superintendent of public instruction for the year 1897—Continued.

CITY SCHOOLS.

Location.	Number of schools.	Number of months taught.	Number of teachers.	Census.	Enrollment.	Total daily average.	Total receipts.	Total expenditures.	Total value of school property.	Total amount of salary paid to teachers.	Total amount paid for lights, rent, fuel, and miscellaneous.	Total amount of interest on indebtedness.	Total amount of indebtedness.
Santa Fe	10	6	10	1,020	583	548	(a)						
Albuquerque	5	9			933	685	(a)						
East Las Vegas	3	9	12	722	611	477	$7,968.74	$8,065.00	$15,000.00	$6,990.00	$320.00	$150.00	$16,000.00
Raton	2	9	9	874	570	311	7,762.02	8,160.28	25,000.00	5,506.25	2,654.03		
Silver City	1	9	5	623	389	245	5,611.67	5,120.61					
Socorro	2	8	5	540	385	224	2,349.82	4,066.71	25,000.00	2,755.00	336.96	962.24	16,716.89

a No data available.

SECTARIAN SCHOOLS—CATHOLIC.

Name and location.	Number of schools.	Number of months taught.	Number of teachers.	Enrollment.	Total daily average.	Value of school property.
San Miguel College, Santa Fe	1	10	8	88	80	$40,000
Academy of Loretto, Santa Fe	1	10	4	60	50	34,000
De La Salle Institute, Las Vegas	1	10	3	100	95	10,000
St. Mary's Parochial School, Albuquerque	1	10	4	80	75	20,000
St. Vincent's Academy, Albuquerque	1	10	4	90	85	40,000
Sisters of Loretto Indian Boarding School, Bernalillo	1	10	8	160	160	20,000
Convent of St. Joseph, Taos	1	10	4	100	90	3,000
Sacred Heart Academy, San Miguel	1	10	3	75	70	7,000
Convent of Mercy, Las Vegas	1	9	3	60	50	2,500
Academy Immaculate Conception, Las Vegas	1	10	6	135	120	6,000
Orphanage, Santa Fe	1	12	2	100	100	10,000
Our Lady of Guadalupe, Sapello	2	10	4	115	100	200
Mora Academy	1	10	5	110	100	5,000
Socorro	1	10	4	32	30	5,000
Las Cruces	1	10	4	40	30	5,000
Mesilla	1	10	2	40	30	5,000
Silver City	1	10	2	30	25	3,000
Los Alamos	1	10	2	35	30	2,000
Total	19	181	72	1,450	1,320	217,700

SECTARIAN SCHOOLS—METHODIST.

Albuquerque	3	9	5	55	45	$10,000
Las Cruces	1	10	1	60		
Las Vegas	1	9	1	58	40	
Dulce	1	9	2	62	50	
Jewett	1		2			
Peralta	1	4	2	28	20	
Martinez	1	4	1	25	20	
Costilla	1	4	1	30	22	
Conejos	1	4	1	20	15	
Ranchitos	1	8	1	58	50	
Rio Bonito	1	4	1	30	22	
Total	13	67	18	426	284	10,000

SECTARIAN SCHOOLS—NEW WEST EDUCATIONAL COMMISSION.

New West Academy	1					$25,000
Los Barelas	1	6	1	65	50	
Ranchos de Albuquerque	1	6	1	64	50	
Las Vegas Academy	1	10	5	85	70	19,000
Ranchos de Atrisco						
Total	4	22	7	219	170	44,000

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Annual report of the superintendent of public instruction for the year 1897—Continued.

SECTARIAN SCHOOLS—PRESBYTERIAN.

Name and location.	Number of schools.	Number of months taught.	Number of teachers.	Enrollment.	Total daily average.	Value of school property.
Laguna	1	10	2	70	45	$1,000
Albuquerque	1	10	5	50	50	3,000
Santa Fe	1	10	6	60	60	14,000
El Rito	1	10	1	60	50	1,000
Embudo	1	10	1	50	45	.....
Jemez Hot Springs	1	10	1	60	45	1,200
Las Cruces	1	10	2	100	80	1,500
La Costilla	1	10	1	35	20	.....
Arroyo Hondo	1	6	1	65	50	.....
Upper Arroyo Seco	1	6	1	50	45	.....
Peñasco	1	10	1	50	35	1,200
Buena Vista	.....	.....	.....	.....	.....	1,500
Cañon Bonito	1	10	2	100	75	1,000
Chaperito	1	10	1	60	40	600
Corrales	.....	.....	.....	.....	.....	1,200
Las Vegas	1	10	2	.....	.....	2,000
Los Lentas	1	6	1	70	45	.....
Mora	1	10	1	40	30	2,000
Pajarito	1	10	1	40	30	1,500
Placitas	1	10	1	30	28	500
Raton	1	10	2	200	160	1,600
Taos	1	10	1	50	40	1,800
Prado	1	10	1	70	60	500
El Rancho	1	10	2	130	100	1,800
Jarales	1	6	1	30	30	.....
Total	23	9	38	1,505	1,178	37,900

RÉSUMÉ OF SECTARIAN SCHOOLS.

Denomination.	Number of schools.	Number of months taught.	Number of teachers.	Enrollment.	Total daily average.	Value of school property.
Catholic	19	10	72	1,450	1,320	$217,700
Methodist	13	7	18	426	284	14,000
New West	5	6	7	219	170	44,000
Presbyterian	23	9	38	1,505	1,178	37,900
Total	60	32	135	3,600	2,952	313,600

BAPTIST MISSION SCHOOL.

The Baptist Mission School at Velarde, N. Mex., is in charge of Rev. W. H. Rishel and Mrs. Rishel. It is supported by the American Baptist Home Mission Society.

There are between fifty and sixty pupils in attendance, Mrs. Rishel having charge of the primary pupils, and Mr. Rishel of the more advanced grades. The work is, as nearly as possible, the same as that done in good public schools. Reading, writing, spelling, geography, arithmetic, and languages are taught. The school has been in progress two years.

UNIVERSITY OF NEW MEXICO,
Albuquerque, N. Mex., August 1, 1898.

His Excellency MIGUEL A. OTERO,
Governor of New Mexico:

In accordance with your instructions of July 18, I beg to return the following report of the progress and condition of the University of New Mexico for the year ending June 30, 1898:

The year has been one of progress and extension in many ways. A question of policy confronted the institution at the threshold of its new development and, after due consideration, was frankly met. In a new country, at a distance from the older

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educational institutions, and in a measure freed from the influence of criticism, the temptation is strong to lower the standards of admission and requirements for graduation. This course may be justified as promoting the greatest good of the largest number, and as a necessary concession to the difficulties which the student meets in securing the necessary preparatory training. But it was considered that the university occupies a unique position in the sisterhood of higher institutions—a position of responsibility and trust—and that from it the Territory might reasonably expect an adherence to the conventional and universally accepted standards of the best Eastern colleges. Accordingly, inasmuch as it does not seem appropriate for a young institution to set up educational ideals in opposition to the results of the experience and uniform agreement of the Eastern college associations, it was decided to accept the standards adopted by the New England group of colleges, and now prevailing, with slight modifications, in the majority of the State universities of the country. An inspection of the latest catalogue will show that the entrance requirements are higher than in most institutions of the Southwest, but the experience of the year has shown that our students can meet these requirements. After the test of practical use our faculty is unanimous in the belief that it is not only possible but expedient to adhere rigidly to the standards adopted. This change has resulted in the dropping of the lowest class in the preparatory department, though the university will continue to assist so far as possible such students as reach it with deficiencies in preparation. One result of the course pursued is to throw added responsibility upon the high schools, and it is expressly desired to encourage these schools throughout the Territory to strengthen their work, especially in the first two years, in order to enable the student to secure the proper amount and kind of preparation for entrance. In this connection it might be a most desirable step at this time to establish, in connection with the Territorial board of education, a high-school board, whose duty it should be to assist in securing coordination and uniformity in the work of all the high schools of the Territory, and the closest possible articulation of these schools with the higher institutions of learning. In many of the Western States the results of such coordination have been most salutary.

It was expected that the striking off of the lowest class would reduce the numbers in attendance, but it is gratifying to note that the attendance during the year has greatly increased. The total enrollment reached 145, of whom 108 were in the academic departments. More satisfactory than mere increase in numbers is the improvement in the quality of the work. The classical department has increased so that, in spite of the fact that German has been removed and placed on an independent foundation, additional instruction is needed and a chair of modern languages should be established. The normal department, which has been doing very useful work, has during the year been so strengthened that it has taken its place among the best in the land. Pedagogic work can always be done most economically in connection with regular collegiate instruction, both departments being gainers by the association. The entire faculty of the university is thus at the disposal of the normal department, and the embryo teacher not only feels the stimulus of the higher ideals of the collegiate work, but has the advantage of the opportunity of observing the actual methods of experienced and efficient teachers. In addition, an arrangement has been effected by which the young teacher acquires practical experience in a model or training school, where she has actual practice in the exercise of her profession under expert guidance. The model school stands in the same relation to the normal school that the clinic does to the medical college, and is equally indispensable. The course in this department has been extended, and compares favorably with any in the country. The commercial department has also been extended so as to embrace a full three-year course, and combines the usual studies of a business college with a thorough academic education.

The greatest changes have been made in the scientific departments, which, in a new country with undeveloped resources, may be said to form the index of the practical efficiency of an institution. Here the university is charged with a double function—that of imparting instruction suited to prepare the student to meet the practical conditions of his future home, and that of inaugurating researches that shall assist in the development of the resources of the Territory. In both these directions, which mutually assist each other, satisfactory progress has been made.

The teaching force has been strengthened by the appointment of Prof. E. P. Childs, late of Dennison University and the University of Michigan, to the chair of chemistry and physics, from which the biology has been permanently separated. This is an appointment which is reported with great satisfaction as a promise of increased efficiency. We are equally fortunate in the appointment of Prof. John Weinzirl, of the University of Wisconsin, as assistant professor of biology and director of the bacteriological laboratory. The latter has proven during the year a very useful and important adjunct to our work, and the researches now under way promise to attract the attention of the scientific world. In biology Mr. F. S. Maltby, late of Johns Hopkins, and Mr. G. E. Coghill, of Brown, have been carrying on independent investi-

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gations, the results of which have been in part published in the scientific journals, and serve to show the opportunities afforded in this land of marvelous scientific advantages.

An extensive series of geological papers from the laboratories of the university has been appearing in the American Geologist, and is the beginning of a survey of the geological resources of the Territory, now well under way. Two parties from the institution have been in the field during the summer collecting material for this purpose, and a large collection of plants and animals, with a number of new species, has been made and will be stored at the university buildings. Already these collections are becoming known and will be consulted as the authentic types of the flora and fauna of the region.

In other lines the faculty of the university have contributed several hundred pages of original matter to the educational and scientific journals, thus bringing the country to the notice of the intelligent public. As a result a continual stream of inquiries reaches us on the part of prospective immigrants.

The work in English and history is very satisfactory, but has become so extensive that, in spite of the fact that assistance has been secured in oratory, it is imperative that the teaching force should be strengthened in this department, Professor Taylor being, like most of the faculty, seriously overworked.

The physical training of both men and women has been systematically undertaken, and the equipment of the gymnasium has been increased. The results of the physical measurements is to demonstrate in a most striking manner the wonderful effect of a residence on the part of young people upon the plateau in building up strong physiques, and especially in establishing a large lung capacity. This fact will go far toward obviating the possibility of collecting in the Territory a race of feeble-lunged descendants of immigrant invalids. During the year to come there will be regular military drill under the direction of an expert commandant, and students will receive credits for this as well as the physical-culture work.

A music department has been connected with the university which will supply a felt need, and result, as is hoped, in the building up of a well-equipped conservatory of music. The regents have begun the erection of a cottage for the use of the custodian, by which means two good laboratory rooms will be made available in the main building; but the needs in this direction far outrun any present prospect for relief, and it is earnestly hoped that the available resources of the institution may be immediately increased. Most of the changes and improvements so far noticed have been made possible by personal sacrifice and rigid economy, but it will be quite impossible to continue even the present amount of work without greater financial resources, and the research work can not be perpetually carried on by voluntary effort.

It may be added that the cooperation of students and faculty has been most gratifying, and all have accepted the limitations imposed by lack of means, and worked loyally for the upbuilding of the institution, and the executive officer can not refrain from the expression of grateful appreciation of the cordial and sympathetic cooperation afforded by the board of regents, faculty, students, and community. No jar or friction has marred the pleasure of the year, and we look forward to a future of healthful growth and usefulness, requiring only the financial support commensurate to our needs to place the university in a position to fitly represent the educational ideals of a great and cultivated commonwealth.

With grateful appreciation of the interest displayed by your administration in the success of the educational institutions of the Territory, all of the above is respectfully submitted.

C. L. HERRICK,
President of the University.

NEW MEXICO MILITARY INSTITUTE, ROSWELL, N. MEX.

History.—By act of the legislature the New Mexico Military Institute was in 1893 "constituted one of the educational institutions of the Territory." Regents were appointed by the governor, and a donation of 40 acres of land from Mr. J. J. Hagerman was accepted and set apart for a building site. In 1895 the legislature authorized the issue of bonds to the amount of $15,000 for the erection of suitable buildings, and at same session further authorized an annual Territorial tax levy of twenty one-hundredths of one mill for the institute's maintenance. The income from this source should be something over $7,000 per annum. In 1897, after negotiating the bonds, as provided in act of issue, the regents completed the buildings, and will open the school for students in September, 1898.

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Location.—The school is located in Chaves County, just beyond the corporate limits of the town of Roswell, but within half a mile of the court-house. It would be difficult to find a better location for a military school. The Pecos Valley is now celebrated throughout the world as a health resort, and the abundant supply of fresh water from the great springs and artesian wells at Roswell renders the town one of the most desirable places of residence in the Territory. Considerable patronage from eastern States is not an unreasonable expectation. The school buildings are 3,700 feet above the sea, the best altitude obtainable, and for solid comfort and thoroughly modern conveniences are in keeping with the natural advantages. Few of the best Eastern boarding schools are so snugly built or so well furnished. The town of Roswell has a population of 2,000 people, cultivated, law-abiding, sober, and industrious. Most of the leading denominations have well-organized churches. The town maintains excellent graded schools; the moral and social influences are necessarily good. Roswell is on the Pecos Valley and Northeastern Railway, which now connects with the Texas and Pacific Railway at Pecos, Tex., and by December, 1898, will connect at Amarillo with the Santa Fe and the Fort Worth and Denver railways. It is also reached by a daily stage line from Lincoln, N. Mex., and a triweekly stage from Fort Sumner.

Buildings and furnishings.—The institute buildings, just completed, are of brick, trimmed with red sandstone; they are three stories, with basement, lighted by gas, heated by steam, hot and cold water on every floor, perfect fire apparatus throughout the buildings, lavatories and baths, modern water-closets, and a complete system of water works and sewerage. The grounds embrace 40 acres of level land. The furnishings, like the buildings, are new and modern; no expense has been spared to make everything thoroughly good, substantial, and comfortable. Few hotels can afford more genuine comfort. The buildings will now accommodate 200 students, with boarding facilities for 75 cadets.

Boarding students.—Under the act of 1895, "each county in the Territory may, through its county commissioners, by competitive examination, or in some other manner to be determined by such commissioners, appoint one student annually, who shall, without any charge for matriculation or tuition, receive during the year for which such student shall have been so appointed instruction in the regular courses taught in said institute." Cadets holding these appointments will pay $190 per session for board, lodging, and laundry in the institute, but will be given free tuition. Cadets not holding appointments from county commissioners will be charged $250 per session of thirty-nine weeks. This amount covers all expenses for board, lodging, laundry, and tuition. Books, clothing, pocket money, and personal necessaries should never exceed $50 additional. Each cadet who boards at institute should bring with him, or procure in Roswell, the following articles: Four sheets for single bed, 2 pillowcases, 1 pair blankets, 1 comfort or spread, 2 clothes bags, 6 towels, 6 napkins, 6 handkerchiefs, 6 white shirts, 6 white standing collars, 2 suits underclothing, 1 toothbrush, 1 brush and comb, 1 blacking brush and blacking, 1 napkin ring, toilet soap, 1 clothes brush.

Uniform.—All cadets will be required to wear the regulation uniform. Measures are taken in Roswell, and a good suit will cost from $14 to $20, including cap, coat, pants, and a vest, if desired. It is perhaps the best clothing in the world. A carefully kept suit has been known to last four years of constant wear. Payment for uniforms strictly in advance. No cadet will be allowed to make bills of any sort in town.

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Instruction.—The corps of instructors consists of four teachers, all men, the superintendent, and the matron of the school. Every teacher employed holds a degree from a strong university. The course embraces the study of English, French, German, Spanish, and Latin, mathematics, and natural sciences. A business course is also given. Common sense requires for the present a thorough training school, and this feature, for some years, will be powerfully stressed. The regents are determined to make a school adapted to the needs of the Territory, yet fully abreast with the times. Solid value will be given a patron for his money.

Athletics.—A good football and baseball coach has been secured. Ample facilities will be afforded for all manly sports and exercises, such as football, baseball, and tennis. North Spring River, a few hundred yards from the buildings, affords excellent swimming and rowing. Probably no other point in the Territory offers such excellent opportunities for boat races. While much attention will be paid to such things, no one will be allowed to neglect for them his school work or military duties.

Military system.—One of the greatest educators of our country declares: "A distinctive military system tends to muscular development and physical health, by an enforced regularity of food, sleep, and exercise. It creates habits of promptitude, order, discipline, and subordination. It fosters self-reliance and force of personal character by removing all extraneous distinctions, and by casting each youth, whatever his antecedent circumstances, on his own individual responsibility. It is equal, uniform, and wholesomely restraining without rigor." This has been the verdict of history. The best teachers of the country favor it as conducing to better discipline, better work, better health, and better citizenship. In preparatory schools of every order it is in some form always desirable. In the busy West, with its imperfect system of secondary schools, it is almost indispensable in securing best results.

Military duties.—While, for the present, the enforcement of really burdensome military requirements will not be attempted, the fact must never be ignored that this is primarily a military school. There will be nothing in which a young boy may not pleasurably and profitably participate. At the same time, a regular commandant will reside in barracks and have charge of them day and night. Frequent inspections are made by the commandant in person, and the usual military discipline rigidly enforced. The school has seventy-five Springfield rifles and two pieces of ordnance.

Age of admission.—It is impossible to prescribe here any certain age of admission. The testimony of another educator, who manages the oldest school in the West, is in point: "For a good education, a good foundation is of the first importance; and boys who remain at home until they are 16 rarely have such a foundation. It is a very common mistake to send boys who are too young to be subjected to temptation to the preparatory department of some college where the pupils room about in town and enjoy at too early an age the privileges of college students. At a good training school the pupils live in the school building and are under the charge of experienced masters. In the evening they study in the schoolroom under the direction of an experienced teacher. The advantage of this system can hardly be overestimated."

The superintendent of the South's oldest training school, which has been in successful operation for one hundred and five years, declares: "For twenty-five years the ages of our pupils have varied from 11 to 25, sometimes 10 to 30. If we had our choice, we should prefer to receive

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boys from 12 to 14 years of age, who can read intelligently, write legibly, and add, subtract, multiply, and divide whole numbers—which is all the preparation needed to enter the school."

Both of these are high-grade military schools, ranked by the United States Government as the very first of their class. The testimony of the New England schools is to the same effect, and opinions of the highest character from all parts of the world justify these views.

It is the intention of the regents of the New Mexico Military Institute to give the people of the territory a sound, thorough, practical school; to provide a first-class home for boys of all ages intrusted to their care; to transact all business with simplicity, economy, impartiality, and downright honesty. The superintendent, matron, and teachers are required to live in the institute buildings with the students. All such impositions as hazing, bullying, and fighting are practically impossible. Gambling, drinking, and all other immoral acts could hardly go undiscovered and unpunished by prompt expulsion. The food and service given the students will be precisely that given the teachers and superintendent's family, and will be entirely wholesome and abundant. A physician, regularly employed, will attend to the sick, for whom an infirmary is provided.

Reports and examinations.—Reports will be sent at stated intervals to parents and guardians, showing the student's progress and conduct. Written examinations will be required at the end of each term.

Resident students.—Students not boarding at the institute will pay $60 per session. While they are subject to the same regulations as boarding students during the day, and are equally liable to be expelled for immoral or intemperate conduct at any time during the session, no responsibility is assumed as to them when not on the institute grounds. For this cause it is highly desirable that all cadets should board at the school.

Politics and sectarianism.—The New Mexico Military Institute, built and maintained by the people, is the property of the Territory. It has nothing whatever to do with politics. Students will attend whatever church their parents desire they should, under the care of the commandant or cadet officer. No exhibition of political or sectarian bias will be tolerated by the regents.

Session of 1898–99.—The first regular session will begin September 5, 1898, and end in June, 1899, embracing three terms of thirteen weeks each.

All amounts payable one-half at entrance, one-half January 1, 1899.

NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS,
Mesilla Park, N. Mex., August 30, 1898.

SIR:—In accordance with your request I beg leave to make the following report on the operations of the New Mexico College of Agriculture and Mechanic Arts, located at Mesilla Park, N. Mex., and the experiment station connected therewith for the year ending June 30, 1898:

The seventh session opened on September 1, 1897, and continued until May 25, 1898, on which day it closed with highly creditable commencement exercises. The session was a successful one. The total enrollment reached 215, an increase of 62 over the previous year. This increase was well distributed among the different departments of the college. The college offers four collegiate courses of four years each, viz: A course in agriculture, a course in mechanical engineering, a course in civil engineering, and a scientific course. Shorter courses in bookkeeping, stenography, and typewriting are also offered.

The college is still compelled to have a subfreshman department, in which students of limited education are prepared for the college proper, and this condition will exist until there are enough high schools in the Territory to do this work for the higher institutions. This condition is not peculiar to New Mexico. In many of the States these departments are maintained and quite a number of high-grade colleges believe

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that their success in college work has been largely the result of the good preparation in their preparatory departments. Owing to the thorough training given in the lower departments the number who enter the college proper is constantly on the increase, and the requirements for admission into the freshman class have been persistently raised, until now they are higher than in most of the agricultural colleges in the neighboring States and Territories and fully equal to the average in the United States. In the faculty the leading universities and scientific schools of the country are represented, and the personnel of the professors and instructors is such as appeals to the people of the Territory for their full confidence and unqualified support.

The faculty and instructors are as follows: Cornelius T. Jordan, A. M., president and professor of political science; Clarence T. Hagerty, M. S., professor of mathematics and astronomy; Arthur Goss, M. S., A. C., professor of chemistry; George Vestal, professor of agriculture and horticulture; Frank W. Brady, M. E., professor of mechanical and civil engineering; Ida M. Jones, professor of Spanish; T. D. A. Cockerell, professor of entomology and in charge of physiology and zoology; Hiram Hadley, A. M., professor of history and pedagogy; Elmer O. Wooton, A. M., professor of botany, geology, and physics; Frederick F. Barker, LL. B., professor of English and Latin; Ralph Roy Larkin, B. S., principal of the preparatory department and in charge of subfreshman class; Frank E. Lester, instructor in stenography and typewriting, librarian, college clerk, and secretary to the faculty; R. Fred Hare, M. S., instructor in chemistry; Charles Mills, instructor in shops; Ellen F. Gibson, instructor in elocution and physical culture and assistant in the preparatory department; Joseph F. Bennett, jr., B. S., instructor in bookkeeping; Fabian Garcia, B. S., assistant in agriculture and horticulture; Geraldine Combs, assistant in the preparatory department; Ida E. Freeman, assistant in the preparatory department and matron of girls' dormitory; Duval Garland Cravens, B. S., assistant in the engineering department; Katherine Doughty, assistant in the preparatory department; Humboldt Casad, assistant in agriculture and horticulture; Elizabeth Wickham, assistant librarian; Helen M. MacGregor, assistant college clerk; John D. Tinsley, biologist to the experiment station; C. H. T. Townsend, biographer and systematic entomologist; Alfred M. Holt, M. S., assistant station chemist; Charles E. Mead, B. S., superintendent San Juan branch experiment station; John S. Thornhill, superintendent Las Vegas branch experiment station.

The amount received from the United States Government, under act of Congress of August 30, 1890, for last year was $23,000. This amount was expended in accordance with the provisions of that act, and the expenditure has been approved by the Commissioner of Education at Washington. The amount received from the Territorial fund for the year was slightly above $5,000. This amount was used to pay for teaching Spanish, for printing catalogues, for insurance, for postage, for pay of janitors, for other incidental expenses, for building, and for such necessary expenses that could not be paid for out of the United States Government appropriation.

During the year the college has grown in the confidence of the people and has greatly increased its facilities for doing successful work. A new science hall has been completed and equipped. This building has seventeen good rooms, and in it are located the chemical, botanical, entomological, and biological laboratories. The material used in the construction of the building is of the best, and the new apparatus purchased is of the latest pattern and design. A girls' dormitory has also been built. This is a large brick building finished in natural wood, with reception room, dining room, matron's rooms, kitchen, and closets on the first floor, and large, airy, well-finished living rooms on the second floor. Good board and washing are furnished for $15 per month. As yet the college has not been able to build a dormitory for young men, but good substantial board in private families, living near the college, can be had for $16 to $18 per month. A number of young men have lived in clubs and thus reduced the price of board and lodging to $8 or $10 per month.

The agricultural experiment station in connection with the college has had a most successful year. Very valuable experiments have been made in many lines, among which may be mentioned experiments with the codling moth, sugar-beet experiments, experiments in irrigation, and some work on plant physiology. There are two substations, one at Los Vegas and one at Aztec. The work at these substations is now in better condition than ever before.

The fund for the maintenance of the experiment station and the substations comes from the United States Government and is expended under the supervision of the Department of Agriculture.

Very respectfully,

CORNELIUS T. JORDAN, A. M.,
President and Director.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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THE REPORT OF THE NEW MEXICO SCHOOL OF MINES.

SIR: In compliance with your request, I herewith submit report of the New Mexico School of Mines for the year ending August 1, 1898, which said report, in so far as it relates to the work of education during the past year and the present conditions and future prospects of said school, has been prepared by the faculty of the institution, and is attached hereto.

I beg leave to submit also the following statement of receipts and disbursements made by me as treasurer of the board of trustees for the year ending August 1, A. D. 1898:

RECEIPTS.

Received from the Territorial treasurer on the school's share of the Territorial institution fund	$4,080.00
Received matriculation fees from students	200.00
Laboratory: Received from students for chemicals and materials used and for assay work by the director	174.45
Total receipts	4,454.45

DISBURSEMENTS.

Building: Paid for repairs and insurance	340.00
Salaries paid to instructors and janitor	3,646.50
Incidental expenses, including meetings of the board, printing, stationery, expense of canvassing, and miscellaneous items	157.28
Equipment: Apparatus purchased	28.85
Chemicals and other material (including fuel) purchased for the use of the school	303.79
Total disbursements	4,476.42

RECAPITULATION.

August 1, 1897, cash in treasurer's hands	285.66
Total receipts	4,454.45
	4,740.11
Total disbursements for year	4,476.42
August 1, 1898, cash remaining on hand	263.69

All of which is respectfully submitted.

JAMES G. FITCH,
Secretary and Treasurer, Board of Trustees, New Mexico School of Mines.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

SIR: We beg leave to submit to your consideration the following report concerning the New Mexico School of Mines for the last scholastic year:

Considering the difficulties with which the management of the school have had to contend, all that could be expected has been accomplished. The faculty has, because of lack of revenue, consisted of but one professor and one instructor. Though the number of preparatory students has been slightly less than last year the number of students engaged in the advanced technical work of the institution has been the same.

The financial statement, inclosed herewith, shows that there has been expended $4,476.42, a sum less than one-half that which the founders of the school thought they were providing when they fixed the rate of taxation for its maintenance at one-fifth of a mill.

The list of students in attendance at School of Mines may be tabulated as follows:

Total number of students	21
Males	18
Females	3
Preparatory	16
Technical	5
Average age	19
From Socorro	16
From abroad	5
Spanish-speaking parentage	5

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It will be noticed that of the total number of students approximately 25 per cent have been engaged in the technical work, and that all of these are from points outside of Socorro.

During the present summer a thorough canvass of the Territory has been made for the purpose of calling attention to the advantages afforded by the school. There is now every reason to expect that the attendance at the institution for the next year will show an increase of at least 50 per cent over that of last year.

For the last three years Prof. W. H. Seamon, B. S. A., of the University of Virginia, has been employed as director of the faculty of the school. Last spring, however, he tendered his resignation, to take effect August 1. To fill the vacancy thus caused the board have secured the services of Prof. F. A. Jones, E. M., C. E., of the Missouri School of Mines. Professor Jones has a practical knowledge of mines and mining operations in New Mexico, Arizona, Mexico, and Central America. For the last three years he has been employed as United States assayer for the port of Kansas City, and has also been chief chemist on the board of geological survey for the State of Missouri. E. A. Drake, M. A., of the University of Wisconsin, an instructor of fifteen years' experience, has been principal of the preparatory department during the past year, and will continue in that capacity. Owing to the expected increase in attendance the coming year it has become necessary to employ another instructor, and the board of trustees are now taking steps to secure a competent person for this position.

The School of Mines is not receiving the financial support that its founders anticipated for it. When the establishment of the institution was provided for in 1889 the assessed valuation of the taxable property of the Territory was, approximately, $45,000,000. Under the appropriation of one-fifth of a mill for the maintenance of the school it was expected that a revenue of about $9,000 would be derived from this source. Instead of this expectation being realized the revenue of the institution has, owing to the depreciation in the value of property and failure to collect taxes, shrunk year by year to about one-half what was anticipated.

With a revenue adequate to its needs the School of Mines can be made one of the most important agencies in the development of the Territory. The well-being of the Territory depends largely upon the condition of its mining industry. The fact that New Mexico contains many rich and easily accessible mining regions where mining operations may be studied directly, and the further fact that New Mexico has a climate of unrivaled salubrity—these are attractions which, under proper conditions, would not only deter the youth of the Territory from going abroad for a technical knowledge of mining, but would also bring within her borders a most desirable element of population from other parts.

All of which is respectfully submitted.

F. A. JONES, *Director.*
E. A. DRAKE,
Faculty of the School of Mines.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

NEW MEXICO NORMAL SCHOOL,
Las Vegas, August 20, 1898.

SIR: Pursuant to your request, I submit herewith a report of the condition of the New Mexico Normal School, at Las Vegas, for the year ending June 30, 1898.

My last report, for the year ending June 30, 1897, after giving a history of operations since the creation of the school, showed that contracts had been let for the completion of the masonry and roof of the normal-school building for the sum of $11,440. The funds for this purpose were realized from the proceeds of the $10,000 of bonds authorized by the legislature of 1897, and current receipts from taxes. It was also stated that the work thus provided for would not include the finishing, furnishing, or equipping of the building.

The work so contracted for was promptly and satisfactorily done, so that the walls and roof of the building were finished, and a fair idea of its external appearance was given. It was expected that enough money might be accumulated out of taxes to finish a few rooms in the lower part of the building and open the school in a small way in the fall of 1898.

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The treasurer's report for the fiscal year ending June 30, 1898, shows the following funds received and disbursed or on hand:

Statement to June 30, 1898.

RECEIPTS.

January 25, 1894, to June 30, 1896, from auditor	$13,387.79
July 1, 1896, to June 30, 1897, from auditor	5,188.21
May 4, 1897, from the sale of bonds	10,000.00
October 4, 1897, from auditor	1,784.82
March 12, 1898, from auditor	2,383.06
Total	32,743.88

EXPENDITURES.

As per previous report, to June 30, 1897	$18,697.31	
For building, July 1, 1897, to June 30, 1898	11,484.00	
Expense of negotiating bonds	500.00	
Sundry expenses	45.00	
		30,726.31
Balance on hand June 30, 1898		2,017.57

Previous to the expiration of the fiscal year under consideration a patriotic movement was inaugurated among the citizens and business institutions of Las Vegas to provide the necessary funds for completing and equipping the normal-school building, so that it might open its doors to the pupils of the Territory at the beginning of the next school year. This resulted in the raising, by subscription, of a fund of $18,475, in the form of an advance to the Territory—the subscribers receiving receipts showing that they are entitled to reimbursement pro rata out of any funds that may hereafter be provided by the Territory for that purpose. With this money at their command the board of regents was able to proceed with the completion of the building in every respect according to the original plans. After due advertisement for proposals, contracts were let to the lowest bidders, as follows:

For plastering	$2,812.50
For doors, windows, and all interior finish	9,400.00
For steam-heating plant	2,650.00
For plumbing	590.00
For electric wiring	250.00
	15,702.50
In addition to this there is allowed:	
For sundry extra work on ventilating ducts, boiler house, etc	300.00
Furniture, equipment for physical, chemical, and biological laboratories, and blackboards, etc	2,500.00
	18,502.50

At the date of this report all the work is rapidly approaching completion, and the school will open with full equipment and ample facilities in every department on the first Monday in October, 1898.

The public spirit exhibited by the people of Las Vegas and vicinity in this matter is worthy of the highest praise.

The school building is the most beautiful piece of architecture in New Mexico. It is also the most substantial and the cheapest public building, in proportion to its size and excellence, in the Territory. It is a three-story stone structure, built of the beautiful purple sandstone from the Las Vegas quarries. Above the third story is an attic containing two large and amply lighted rooms, which will be used for a museum and gymnasium. The assembly room has a seating capacity of 400, and the school has ample facilities, both as to room and equipment, for the accommodation of 400 pupils. The heating and ventilating arrangements are according to the most improved modern standards. The school is located on a commanding site, with perfect drainage. It is in the heart of the city, so that the city public schools are available for the purpose of model and training schools. An arrangement has been made with the board of education of East Las Vegas by which certain grades of the city schools are to be taught in rooms of the normal school, available for that purpose, as model schools. The high-school grades are to be merged in the academic course of the normal school. For these advantages the city board of education pays to the normal school a certain percentage of its revenue, which is sufficient to enable the latter to make a very material increase in its faculty.

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The board has engaged as president of the faculty Prof. Edgar L. Hewett, heretofore principal of the training department of the Colorado State Normal School at Greeley. We believe the Territory is fortunate in securing his services, which were most reluctantly dispensed with by the institution with which he was connected. The Colorado normal school ranks as one of the best in the United States, and Professor Hewett's indorsements from its authorities, as well as from other prominent educators, are of the highest possible character. With four other professors, selected from among graduates of such great institutions as Leland Stanford and the Chicago University, the board feel confident that it will open the school with an exceptionally strong faculty, and with every promise of usefulness to the people of the Territory.

The course of instruction will embrace two main departments: The normal, whose aim will be to educate and train teachers for the public schools of the Territory, and the academic, which will afford a thorough general education to equip pupils for the duties of life, and also to admit those who desire it to the higher universities.

Respectfully submitted.

FRANK SPRINGER,
President of the Board of Regents.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Sante Fe, N. Mex.

SCHOOLS IN LAS VEGAS.

Buildings.—In the city of Las Vegas is located one of the Territorial normal schools. This structure, built of native red sandstone, will when completed be the most imposing building in the Territory. The aggregated cost of the building, which is now three stories high and ready for the roof, when completed, is $40,000. It is expected that the building, or a part of it at least, will be ready for occupancy by September 1, 1898.

On the west side are two stone buildings, each two stories high, well adapted for school purposes; on the east side are three buildings two stories high, one the public school building of four rooms, another the academy building of four rooms, and the third the central or city building, four rooms of which are used for school purposes.

Schools.—On the west side are three public schools, two private schools, and three church schools. On the east side are ten public schools and the high school.

The west side is not included in the city corporation, therefore I have to do only with the east side public schools.

Board of education.—M. W. Browne, president; C. V. Hedgecock, vice-president; J. A. Carruth, J. M. D. Howard, George V. Reed, R. B. Rice, N. B. Stoneroad, Mr. Harmon, W. C. Reid, secretary; C. E. Perry, treasurer.

Teachers for 1897–98, central building: Miss Maggie Bucher, principal of high school; Miss Flora Beschle, eighth grade; Miss May Howard, part of fifth and sixth grades.

Teachers for 1897–98, academy building: Miss Lucy Stone, principal, seventh grade; Miss Laura Davenport, sixth grade; Miss Alice Blake, fifth grade; Mrs. Sallie Douglas, fourth grade.

Teachers for 1897–98, public school building: Mrs. Mattie Garlick, principal, third grade; Miss Belle Rogers, second grade; Miss Ella Stoneroad, first grade, A division; Miss Minnie Holzman, first grade, B and C divisions.

Statistics for the school year 1896–97.

School census of East Las Vegas	727
Number of months school was in session	9
Number of pupils enrolled in school	610
Average daily belonging in school	497.9
Average daily attendance at school	474.6
Per cent of attendance on belonging	95.3
Number of cases of tardiness during the year	572

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REPORT OF THE NORMAL SCHOOL OF NEW MEXICO, AT SILVER CITY.

The normal school of New Mexico, located at Silver City, has completed the fourth year of its existence. The school was established by the Territorial legislature of 1893 and was opened for the admission of pupils the following year. Steps were immediately inaugurated for the erection of a building commensurate with the wants and needs of the school. Since that time a three-story building of nine rooms has been erected and equipped with many of the modern conveniences known to first-class school architecture. A more costly building might have been erected by deferring the opening of the school for several years, but the board of regents proceeded upon a different theory. They considered the demand for such a school was urgent, and the sooner they established it to satisfy these demands the better they would be serving the people of the Territory. Besides, they had faith enough in the Territorial legislature to believe that as the school increased in numbers and efficiency ample provisions would be made when the time should come for its accommodation. The present structure, however, serves the purposes of the students and the departments of the normal proper quite well.

The school furniture is not costly, but neat, serviceable, and of the latest style. Much care has been exercised in its choice and arrangement. The assembly room is seated with opera chairs with folding arm attachments. The other rooms are furnished with desks, chairs, and work tables of various descriptions. Everything about the building is kept clean and in good repair, "as good as new," under the impression that such things are important elements in training during the formative period of the student.

The apparatus of the school at this early period of its existence is not extensive, of course. Only such purchases have been made as were the most needed. To supply the deficiency in this line students, by the assistance of the teachers, have largely constructed their own working material. While the use of such material may not give the most accurate results, yet the student has a much more profitable experience, and he will doubtless appreciate more fully the more delicately constructed instruments of the scientist. It is the design of the management of the school, however, to use both the scientific and unscientific apparatus in actual work, the better class being added as rapidly as the funds will permit.

Within the last two years the school has come in possession of a fine cabinet. The collections have been made wholly by the students, teachers, and friends of the institution, and represent quite fairly the geological and mineral wealth of this section. In point of variety it perhaps excels any similar collection in the Territory. The next movements in this direction will be made along the lines of zoology, botany, and ethnology.

Within two years the library has grown from two or three volumes to more than 2,000 volumes. The number and quality of books in the pedagogical department is especially strong. The school has become one of the remainder depositories for the Government publications. A certain sum of money is set apart yearly for subscriptions to current publications and to purchase new books.

The purpose of the school is the same as all normals, namely, to prepare teachers for the Commonwealth that created it. To carry out this purpose it seeks to do three things: (1) To give the student a thorough knowledge of the branches required to be taught in the common

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schools of the Territory; (2) a knowledge of pedagogy which deals with the art and science of teaching; (3) practical training, consisting of observation of good teaching, illustrative teaching, and practice teaching.

Students who desire to enter upon the teachers' profession are offered both an elementary and an advanced course. The former prepares them to teach in the elementary schools and high schools in the Territory, the latter for still higher work. Pupils are permitted to pursue academic studies only, if they so elect, but so far all the graduates of the school are from the professional department. No teaching pledge is required, for the reason that it often gives the pupil and parents a wrong attitude toward the school. It very frequently occurs that students enter the professional classes having no desire to teach, but become so attached to the work that they graduate with honors and join the teaching force of the community.

There has been a steady increase in the enrollment and average daily attendance from the beginning. This year, 1897–98, it reached the number 72. Including the year just passed 20 persons have been graduated. Sixteen of these are engaged in teaching.

The scholastic year consists of forty weeks, which is divided into terms of twenty weeks each. A summer term of four weeks was added this year as an experiment and proved reasonably satisfactory. Forty-seven were enrolled, and considerable interest was manifested.

The future prospects of the school are bright. It is growing in popularity and general good will among the people of the Territory. The increasing attendance calls for the organization of new and separate departments and a larger corps of instructors. The time has come when more teachers must be added to do the most effective work. This will necessitate a larger appropriation of funds, but we have no doubt that the next legislative assembly will generously sustain the school.

NEW MEXICO SCHOOL FOR THE DEAF AND THE BLIND,
Santa Fe, N. Mex., August 20, 1898.

DEAR SIR: I am in receipt of your favor of the 18th ultimo, asking for a report on the condition of the school for the deaf and the blind under my charge, for the Territory, and will reply that there is absolutely nothing that has been executed by the Territory in behalf of the school for the past year and half, for lack of available and sufficient financial means. Of course there are many afflicted children of this Territory who are still clamoring and demanding the government of the Territory to treat them well and equitably in the matter of education. The main aim of the school is and should be to give them a good, common-school, English education, with the ability to read, write, and cipher, and with a knowledge of good morals and gentle manners. It is the only one thing that not only instructs them in better paths of living and improves their positions in society and citizenship, but encourages them to follow what will make men and women of them, and give them worthy purposes in their future life. The financial condition of the school has never been satisfactory nor sound; hence it has been an inevitable hindrance to the progress and management of the usual affairs of the school. It is expected that the school will reopen late in this coming autumn and be in full operation at its next term. I am still in hopes that the next legislature of the Territory will act and decide upon something to better equip and aid the school in a right and liberal manner.

The meeting of the International Association of the Instructors of the Blind occurred at the Michigan school for the blind in July last and continued in its session three full days. The attendance at the above convention was over fifty delegates, representing most of the various public schools for the blind in North America. Its worthy papers and discussions were all directed to the educational and industrial work for the blind. I was cordially invited and treated as a guest of that school, and represented this school in the convention. I have received new inspiration and fresh experiences for my better help and encouragement in this work for the blind of the Territory.

The fifteenth convention of the instructors of the American schools for the deaf was held at the Ohio school for the deaf, and continued in its daily session for a week. Its attendance was very good, comprising about three hundred and fifty

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principals and instructors from most of the different schools for the deaf, with five teachers of the deaf from Great Britain. Excellent papers and discussions on various subjects in regard to all methods of instructing the deaf, as now employed in line of intellectual, industrial, and physical education pursued in the schools for the deaf in America, were of worthy interest and value. It has been fourscore years since the first school for the deaf was founded at Hartford, Conn., and excellent results, wonderful changes, and rapid advancements have taken place in the education of the deaf.

During the last scholastic year I still managed and instructed a school as a private enterprise for five mute Indian children and four white deaf pupils, at their own expense for their schooling.

My real hope is that increased means, decent facilities, and good encouragement will be given the school to promote the interests of afflicted uneducated children, who are generally considered as a menace to the community in which they reside and can not be benefited by instruction in ordinary schools on account of their misfortunes; and that the affairs of the school being designed especially for their benefit will be conducted with greater vigor, better efficiency, and stronger economy to educate, elevate, and civilize them. The Territory should accede to their wants to be educated, and push forward and raise by its efforts and liberality the cause of this education to a higher standard to render the school a good success, and make it one of the most beneficial, progressive, and honored public institutions of the Territory. From the view of the above statement it is seen that "He hath done all things well: He maketh both the deaf to hear and the dumb to speak," and the blind to see in the light of wisdom.

Trusting, my dear governor, that you will endeavor in all things to see a way clear and just to foster, encourage, and provide for all that is needed for the full maintenance of the school, and to promote all the interests of the cause of this education for afflicted children of the Territory to fit themselves in this sphere for which they were intended by the holy Creator, this report is respectfully submitted.

LARS M. LARSON,
P cipal New Mexico School for the Deaf and the Blind.

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Annual report of the New Mexico Children's Home, Albuquerque, N. Mex.

Number of children in the home	12
Number adopted from home	4
Number returned to father	4

EXPENDITURES FOR THE YEAR.

Provisions	$628.93
Care of the children	310.00
House rent	240.00
Fuel	50.00
Merchandise	250.64
Incidentals	24.85
Total	1,504.42

This home for children is incorporated under the laws of the Territory of New Mexico, and it is doing a noble work.

The directors are as follows: Mesdames M. J. Borden, A. L. Chandler, W. S. Lowe, W. C. Hadley, Louis Ilfeld, William Farr, A. G. Wells.

The officers are Mesdames J. W. Granger, president; L. E. Parshall, vice-president; L. W. Roberts, secretary; J. M. Moore, treasurer.

ST. VINCENT'S HOSPITAL.

The Sisters of St. Vincent maintain an excellent hospital in the city of Santa Fe, where the rich and poor are treated alike. In connection with the hospital, these noble Sisters are doing a grand work in the orphanage.

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Following is a report of St. Vincent's Hospital for the fiscal year ending March 6, 1898:

Number of patients in hospital March 1, 1897	36
Number of patients received during the year	70
Number of patients discharged during the year	68
Number of patients died during the year	18
Total number of days	6,607
Number of prescriptions filled	459
Number of patients remaining in hospital March 6, 1898	20
Number of cases treated during the year	106

Financial statement.

RECEIPTS.

From Territorial appropriation	$2,639.77
From the sanitarium	298.16
Balance due from the Territory for forty-eighth fiscal year	1,360.23
Total	4,298.16

DISBURSEMENTS.

Groceries	$1,758.47
Meat	849.13
Feed for cows	234.08
Tea and coffee	84.00
Drugs	200.61
Water	120.00
Bread	343.24
Coal oil	78.75
Coal and freight	328.27
Butter	226.61
Pauper burials	75.00
Total	4,298.16

INDIANS.

NAVAJO AGENCY,
Fort Defiance, Ariz., September 6, 1898.

SIR: In compliance with your request of the 29th ultimo, I take pleasure in furnishing you with such statistics relating to the Navajo Indians as I have been able to get. The wide extent of the Navajo country and the scattered manner in which these Indians live make it impossible to obtain accurate statistics with the very limited force of employes under me, who have, moreover, other matters of importance which keep them fully occupied.

I regret that I am unable to give you fuller and more exact information.

Very respectfully,

CONSTANT WILLIAMS,
Major, Seventeenth Infantry, Acting Agent.

His Excellency the GOVERNOR OF NEW MEXICO,
Santa Fe, N. Mex.

Population, 20,500 (estimated).
Number who wear citizen's clothing in part, 1,000 (estimated).
Number who can read, 250 (estimated).
Number who can use English enough for ordinary intercourse, 500 (estimated).
Number of children of school age (between 6 and 18), 4,000 (estimated).
Number, kind, and value of dwelling houses for Indians built during the year, 75; stone; $150.
Cost of each to Government, about $9 for doors and windows.
Proportion of Indians who obtain subsistence for themselves or others in civilized pursuits, all.
Government rations or annuities issued, none.
Number of missionaries, two males, three females.

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Number of Indians who are church members, none.
Number of formal marriages solemnized by clergymen or magistrates during the year, none.
Number of divorces granted by courts during the year, none.
No data as to births and deaths.
Number of Indians killed during the year, 2 (by Indians).
Number of whites killed by Indians during the year, none.
Number of Indian criminals punished during the year, by agent, 15; by civil authorities, 2.
No data as to number of acres cultivated or of crops raised during the year.
Amount earned by Indians during the year in freighting for Government, $1,421.44.
Value of Indian products sold to Government during the year, $4,807.84.
No data as to freighting and other labor performed for private individuals.
No data as to Indian products sold to private persons.
Number of sheep owned by Indians, 800,000 (estimated).
No data as to other stock.
Number of Government schools, 2; capacity, 150.
Average attendance of pupils during the year, 180.

CONSTANT WILLIAMS,
Major, Seventeenth Infantry, Acting Agent.

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., August 11, 1898.

SIR: In compliance with instructions from the Office of Indian Affairs dated June 1, 1898, I have the honor to submit the following report of the Pueblo and Jicarilla Agency for the year ending June 30, 1898:

Having taken charge of this agency July 1, 1898, I can do no more than make a résumé of affairs as they appear from the records of the office. During the year three different persons have acted as agent, and, accordingly, affairs are decidedly mixed.

The agency office is situated at Santa Fe, with the subagency over the Jicarilla Apache Indians at Dulce, N. Mex., 216 miles distant.

PUEBLOS.

Population.—A census was taken a few days before the close of the year as accurately as the exigencies permitted. From this it appears that in the eighteen pueblos there are 9,494. Of these 2,475 are males above 18 years of age, 2,648 are females above 14 years of age, and 1,897 are school children between the ages of 6 and 16 years, of which number 641 are attending or have attended some school, while 1,256 are not attending any school. These figures can only be considered approximate. In only five pueblos was it found possible to take a complete census, in seven others a tolerably reliable estimate was obtained, while in six of the smaller pueblos no data whatever could be obtained, as there is no employe of this office in the vicinity. Heretofore there have been nineteen pueblos, but during the past few years the Pojuaque Indians have gradually deserted their pueblo and joined their people, about twenty in number, with the pueblo of Nambe, until now the Pojuaque pueblo has become extinct. This was a wise movement, in my opinion, as the people were not strong enough to accomplish much good or to sustain a pueblo government.

Industries.—The pueblos are a practically self-supporting people, farming many thousand acres of land, raising large herds of horses, burros, sheep, and goats. Many of the people live in comfortable, well-built, and attractive adobe houses, surrounded by well-kept orchards. All the lands have to be irrigated and much time and labor is spent caring for the ditches. One of these canals, built by the San Felipe Indians, is 10 miles long and in many places 20 feet deep and 15 feet wide. This canal was constructed by the Indians with no other implements than shovels, spades, and picks. Some of the pueblos—Taos, for example—not only raise sufficient wheat and oats for themselves, but also supply the whites of the surrounding towns. If these people could be furnished a few practical farmers to instruct them, they would soon become well-to-do citizens and a help to the Government under which they live instead of a burden.

Threshing.—The method of threshing among the pueblos especially calls for aid and assistance. The wheat and other grain is placed on the ground and the cows, horses, burros, goats, etc., are driven around over it until the grain is tramped out. Of course it is mixed with the excrement of all these animals, and untold labor is required in cleaning the grain, which is accomplished by picking foreign substances out with the fingers, throwing it up from baskets, that the breeze may blow away

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the chaff, and washing it repeatedly in the water of a near-by ditch. To aid them in advancing beyond these primitive plans, I recommend that a fanning mill be furnished each pueblo. These mills, I am sure, will help them to clean their grain quickly and in such a manner as to render it salable in the surrounding markets. With the present method these people get only about half price for their grain, which is much damaged by tramping, washing, and being improperly cleaned. These fanning mills will encourage them to raise larger crops, and, as they will get double prices, the farming instinct will be greatly fostered.

Schools.—There are fourteen day schools under this agency and one contract boarding school situated at Bernalillo. The latter is in good condition and well kept. The day schools are, as a rule, in a most lamentable condition, owing to the fact that they have been, in my opinion, much neglected, and because they are conducted in buildings rented from the Indians themselves, some of them without floors and with absolutely no ventilation, without sufficient water, and dependent upon the school children for fuel. Very few of these schools have anything but wooden benches placed around the wall. In two cases—San Felipe and Santo Domingo—the Indians refuse to send any girls to either the day schools or the nonreservation boarding schools at Albuquerque and Santa Fe. The inhabitants of San Felipe have agreed to send all their girls to the day school, provided a noonday lunch and a housekeeper are furnished, but as yet I have been unable to obtain authority for the same.

It is a lamentable fact that these pueblos do not wish to send their children to school. In only one village, that of Zia, do all the children attend. At Acoma the average attendance of the scholastic population is but a little over 3 per cent. If this is not a deplorable condition for a people, and one which calls for redress and reform, I do not know what bad conditions are. At Zuni there is a scholastic population of nearly 300 and an average attendance of only 40. This pueblo alone could support a school as large as Chilocco, and if the children of all the pueblos could be in schools four Chiloccos or two Carlisles could be supported.

Compulsory education.—The poor attendance of the children of this agency illustrates in the strongest possible manner the great need of a compulsory school law. Taking the entire agency, the attendance, compared with the scholastic population, is the alarming figure of less than 16 per cent. These people are said to be citizens. If they are they should be subject to the compulsory laws of New Mexico. If they are not citizens, a law of Congress or an order from the Interior Department should place every child of proper age in school. Why should this grand and glorious nation become a laughing stock by establishing a school for these people and having a few ignorant Indians defeat its plans and policies through superstition and a kind of Chinese unprogressiveness to such an extent that only 3 per cent of the scholastic population attends the school? A compulsory law would be very easy to enforce, for one of the pueblo characteristics is to be obedient, and such a law has only to be passed and explained to them to be obeyed. I earnestly urge this matter to the early consideration of the Indian Office.

The condition of the various schools may be summed up as follows:

Acoma.—The school building is of stone and a substantial one. It is rented from the Catholic Church, though the Indians say the building belongs to them and the rent should be paid to them. This building should be purchased. There is no water, except such as is obtained from ditch, and no outhouses for the comfort and privacy of either teacher or pupils. Present enrollment, 17; average attendance, 6.7; expected increase, 100 per cent; scholastic population, 200.

Cochiti.—This school is conducted in a rented building which is inadequate in every respect. No wood is furnished except by the children, who bring one stick each, and consequently half the time there is no fire. A new schoolhouse should be built immediately. Present enrollment, 32; average attendance, 12.25; probable increase, 40 per cent; scholastic population, 93.

Isleta.—The school here is in a rented building and no seats, excepting some old benches of antediluvian pattern, which are ready to fall down. The building adjoins the graveyard where smallpox victims and others have been buried on top of each other for hundreds of years, bones and decayed animal matter being thrown up with each new grave. This place is in the center of the smallpox region, and there are few months when the disease is not prevalent. I beg that I may be allowed to relieve this unsanitary condition. Present enrollment, 29; average attendance, 16.30; probable increase, 35 per cent; scholastic population, 122.

Jemez.—School is conducted in a building rented from the Presbyterian Board of Home Missions. This building is in good condition and should be purchased by the Government. Present enrollment, 61; average attendance, 26.5; probable increase, 20 per cent; scholastic population, 131.

Laguna.—Building was built by Presbyterian Board of Home Missions and turned over to the Indians. The Government pays no rent. Twenty acres of land is reserved by the Government for school purposes, and a new and adequate building

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should be erected at once. The water for school and pueblo is carried from railroad station by agreement with the company, and piping should be laid to convey water to school and village. Present enrollment, 34; average attendance, 15.7; probable increase, 50 per cent; scholastic population, 84.

Pahuate.—This school is located at one of the outlying villages of the Laguna pueblo, and the building, rented from the governor of Laguna, is in fair repair, but too small. A new building should be erected with a capacity of 50. Present enrollment, 33; average attendance, 12.8; probable increase, 25 per cent; scholastic population, 125.

Santa Clara.—School conducted in a totally inadequate building rented from an Indian. It is very small, low ceiling, without any equipment except desks. A new building should be erected here. Present enrollment, 33; average attendance, 14.36; probable increase, 25 per cent; scholastic population, 74.

San Felipe.—School in rented building belonging to Indians. It has no floor, poor ventilation, and ditch water. New building needed here. Present enrollment, 42; average attendance, 17.6; probable increase, 50 per cent; scholastic population, 96.

San Juan.—School building part of church and rented from the vicar-general. Poor equipment; new building needed. Present enrollment, 30; average attendance, 18.9; probable increase, 30 per cent; scholastic population, 85.

Santo Domingo.—Schoolhouse is rented from the vicar-general, but the ownership is disputed. Present enrollment, 51; average attendance, 14.26; probable increase, 75 per cent; scholastic population, 228.

San Ildefonso.—School conducted in building rented from Indian governor. It is in poor condition, one room being without floor. A new building is indispensable to the good conduct of the school. Present enrollment, 28; average attendance, 17½; probable increase, 20 per cent; scholastic population, 44.

Taos.—School building is rented from the priest at Taos. There are no desks, but rickety benches. The roof leaks and the doors and windows are not well fitted, which renders the building cold in winter. School has depended on the children bringing one stick of wood apiece each morning for fuel. Part of the time there is no fire. A new school building is indispensable. Present enrollment, 57; average attendance, 25.25; probable increase, 25 per cent; scholastic population, 78.

Zia.—School is conducted in a building rented from an Indian. It is in a most lamentable condition, without any ventilation whatever, narrow dirt floor, poor light, and altogether it is absolutely not fit for a stable. A new building should be built at once. The water is taken from the river and is so alkaline as to be actually poisonous. The attendance, however, is the best of any of the schools, every child except one being in school. The Department should see that better quarters are provided at once.

Zuni semiboarding school.—This is the only school plant in the agency owned by the Government. The buildings were purchased from the Presbyterian Board of Home Missions, and are sadly in need of repairs and improvements. The sewerage is very poor, endangering the health of pupils and employes. Estimates of repairs and contemplated improvements have been sent to the Office of Indian Affairs under date of March 17 and July 23, 1898. Present enrollment, 72; average attendance, 40.1; probable increase, 100 per cent; scholastic population, 295.

Following is a list of the day schools, with their respective teachers, who receive a salary of $72 per month each:

Acoma, Miss Cora A. Taylor; Cochiti, Mrs J. B. Grozier; Isleta, Mr. James Hovey; Jemez, Miss Emma Dawson; Laguna, Mrs. Annie M. Sayre; Pahuate, Miss Annie M. Nichols; Santa Clara, Mr. William P. Taber; San Felipe, Mr. W. C. B. Biddle; San Juan, Mr. Felipe Valdes; Santo Domingo, Mr. W. S. Holsinger; San Ildefonso, Mr. Thomas Dozier; Taos, Mrs. Alice G. Dwire; Zia, Miss Caroline E. Hosmer.

Zuni semiboarding school, Miss Elmira R. Greason, principal teacher; Miss Ethel E. Gregg, assistant teacher; Miss Fannie J. Dennis, matron; Miss Ella P. Dennie, assistant matron.

In April a supervising teacher was authorized by the Department, and Mr. Charles E. Burton, of California, was appointed, at a salary of $840 per annum.

New schools.—A new school has been authorized for the pueblo of Nambe. I shall recommend new schools at the pueblos of Sandia, Santa Ana, Picuris, and Tesuque, to be started about October 1, 1898. Also, the subagency for the Jicarilla Apache Indians should have a boarding school with a capacity of 300 pupils; but the details will come more properly under the report on said subagency.

I have recommended that the Government procure or build proper schoolhouses, because rented buildings are unsatisfactory and hard to keep in proper repair. A Government building and grounds can be beautified and rendered homelike, which is impracticable in a rented one. The schoolhouse and teacher's residence should be a pattern for implanting higher ideals in the minds of the Indians, which is not the case where it is a building which was originally intended for an Indian's dwelling, and is exactly like the houses in which the pupils live.

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SILVER CREEK CANYON, MOGOLLON MOUNTAINS.

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Housekeeper and noonday lunches.—I am sure that the experiment of furnishing a noonday lunch for the children, which has been an experiment at the San Ildefonso school, has proven a success. It is a significant fact that at this school there was a steady increase in average attendance during the months of April, May, and June, the largest average attendance of the year being in the latter month, while at all of the schools where no lunch was furnished there was a steady decrease in the average attendance during these months. This decrease is easily explained, as the children were needed at home to help in the culture of the ground and other duties, it being the busy season.

With a housekeeper in the school the girls may be taught the simpler methods of good cooking, the care of the dining room, and good housekeeping in general. At all these schools and pueblos the teacher should devote a portion of each day or week to instructing the adult Indians in industrial pursuits. While these Indians have made great progress and are self-supporting and civilized in a fashion, yet they are not self-supporting in an enlightened way, but, like Topsy, "just grow" or exist without the aid of the Government. In order that they may be taught to discard the blanket and the moccasins and the leggings and other paraphernalia of savagery, I think a housekeeper at least should be furnished each school, so that the girls and women may be helped, and the older or adult Indians taught to farm, raise stock, and build comfortable houses, etc., by giving the teacher time to get out among them and teach them the language and civilized pursuits.

Arts, trades, etc.—The only arts that I know anything of among these Indians are blanket weaving, basket making, and pottery making. The Zunis are especially apt in weaving, and some blankets are woven so skillfully that they are waterproof, and are so beautiful and of such excellent texture that they are sold for as much as $150 for a single blanket. The pottery ware of the Lagunas and the Santa Claras is of excellent workmanship.

Some of the Indians are skilful mechanics and are sought after as laborers on the railroads to the exclusion of the Mexicans.

The greatest industry, however, and the one that will civilize them quickest, is farming, stock raising, and horticulture. When any savage people can be made to love their homes, and to be interested in improving and beautifying them, there is some hope. If these Pueblos could have encouragement and assistance along these lines, they would soon be an intelligent and progressive people.

Returned students.—This is one of the most perplexing subjects of all. While a great percentage of the returned Carlisle and Santa Fe and Albuquerque students turn out well and make fairly good citizens, yet if we admit them all to make good citizens, even then the whole number of such students, compared with the whole number of Indians steeped in superstition and ignorance and unprogressiveness, is so small that the good is swallowed up in the bad, like a barrel of fresh water tipped over into the Atlantic. While Carlisle and Haskell and Chilocco and Phœnix are educating 1,000 children 5,000 new ones are born in the Indian villages. The lesson is surely a plain one. The Government must educate a great many of the Indians so that the educated influence will overbalance the uneducated, or give up in despair. As long as there are Indian villages of uneducated and unprogressive people, just that long will there be myriads of Indian children to take off and educate and turn back into the slough of despond. Put farmers and housekeepers and matrons and compulsory education in the Indian homes and such conditions can not possibly exist many years. Then when the returned students do try to make men and women of themselves the home influence will help them on their way instead of tending to drag them down, as it undeniably does at the present time.

Missionaries.—Missionaries are supported at Zuni, Mr. and Mrs. Vanderwagen; a medical missionary at Laguna, Dr. C. E. Lukens, and two teachers at Seama, who conduct a very successful school. These missionaries, who are supported by religious societies, are doing a very good work along religious and industrial lines, and deserve the consideration of the Indian Office.

Physicians for the Indians.—These Pueblos may be said to be suffering from some form of epidemic almost constantly, any disease which is once introduced among them seeming to run through the entire tribe before subsiding.

From the amount of medicine furnished by this agency to the teachers of the various day schools I am led to believe that the Indians are gradually being brought to appreciate the fact that "white man's medicine" is superior to the "witches' caldron" of their own "medicine man," which, in serious cases, of course, oftener kills than cures, and it seems to me that this tendency should be encouraged by establishing among them a certain number of physicians supplied with the necessary medicines to intelligently treat the ills which they are heir to.

The last expression is used advisedly, it being an undoubted fact that every pueblo contains cases of syphilis in some of its numerous forms, the death rate among them being due probably in a greater percentage to syphilitic consumption than to any other two, perhaps three, causes combined. In parenthesis it may

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remarked that were it not for the deaths due to consumption and the great number of cases of incipient life strangled before breath, the Indians, as a race, would increase much more rapidly than they are now decreasing.

Aside from these considerations for their welfare, which every human breast must entertain, it is indubitably a fact that when a physician has been established in an Indian tribe his success in treating the people thereof has tended in a great measure to lessen the influence of the "medicine man," and just in proportion as this feeling of reliance on these quacks subsides does the advance toward civilization make strides.

Every consideration, therefore, pointing not only to the necessity but the expediency of their employment, I have the honor to recommend that five physicians be appointed for these various pueblos, which should be divided into five districts, as follows: The pueblo of Zuni, containing 1,796 inhabitants, to be the first district and to have a resident physician; the pueblos of Acoma, Isleta, and Laguna, containing about 3,000 inhabitants, to compose the second district, with a physician resident at Laguna; the pueblos of Cochiti, Jemez, Santa Ana, Santo Domingo, Sandia, San Felipe, and Zida, containing 2,852 inhabitants, the third district, the physician to reside at Bernalillo; the pueblos of Taos and Picuris, containing 570 inhabitants, the fourth district, the physician to reside at Taos City, 3 miles from Taos pueblo; the Pueblos of Santa Clara, San Ildefonso, San Juan, Nambe, and Tesuque, containing 1,194 inhabitants, to be the fifth district, the physician to reside at Santa Fe or Espanola.

These pueblos have been grouped with reference to their proximity to one another rather than to their number of inhabitants.

JICARILLAS.

This subagency is at Dulce, N. Mex., 216 miles distant from agent's office at Santa Fe. The Indians here receive rations at stated periods. While they do some agricultural work, it is not to much advantage. They raise considerable hay, corn, wheat, oats, barley, rye, potatoes, onions, and beans. Six hundred tons of hay were harvested last year, and I recommend that this industry be encouraged. In order that they may be able to sell it at remunerative prices, hay presses should be provided them and the Government should purchase hay from them to feed the agency stock.

Allotments.—The lands of this subagency have been allotted to 845 Indians; but when the allotment papers were returned only about 120 could be delivered, owing to the confusion of names or the neglect of the allotting officers. Therefore the anomalous condition prevails of an entire tribe receiving allotments and only 14 per cent of the homes delivered, the other 86 per cent being filed away in the office of the clerk in charge.

Condition of Indians and reservation.—These Indians are furnished rations to about one-third the amount necessary for their support. Their reservation is a mountainous region, wholly unfit for agriculture, unless some means of irrigation is provided. Under present conditions they can never become self-supporting, as they have no resources from which to live. Unless some means can be devised by which they will be enabled to help themselves, their rations should be increased. There is a lake 22 miles distant which might be utilized for irrigating purposes, which would enable them to pursue agriculture profitably and in time become self-supporting.

Missionaries.—Two estimable ladies of the Methodist Church, and supported thereby, are doing a good work here, holding weekly religious services and encouraging morality in every way possible.

Roads and bridges.—Ten days' work by each able-bodied Indian have put the roads in good condition. Fourteen miles of new road have been constructed and twelve miles of old road repaired. Fifteen bridges have been built.

Arts and trades.—Basket making, bow and arrow making, and beadwork are the special features of these people, and their work is of excellent quality.

Indian courts.—An Indian court is maintained, composed of three judges. During the year 72 Indians have been jailed for drunkenness and 13 have been punished for various crimes and misdemeanors. Two have been punished by the Territorial courts for housebreaking and cattle stealing. Some plan should be used to break up the whisky selling, which is carried on to an alarming extent. These Indians are allowed to go to neighboring towns to trade, and while there they get all the whisky they can pay for. In my opinion, a trader should be placed on the reservation to supply them with everything they need, and the Indians should not be allowed to go off the reservation without the consent of the clerk in charge.

Education.—These poor people have no educational advantages whatever. They have petitioned this office time and again for a boarding school, and it is only justice that they be given school facilities. This boarding school at the Jicarilla subagency I consider the most pressing need of this agency. There are 242 children of

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school age, and the Indians are very anxious for the school. They have promised to send every child to the school and support it faithfully, and I believe they will do so. A school with a capacity of 300 can be supported there, and I most earnestly recommend its establishment at the earliest date possible. I consider $30,000 a conservative estimate for the entire plant. About two years ago 160 acres of land was purchased for the establishment of a school, but the matter was allowed to drop. A large two story adobe building of eight or ten rooms is situated on the land, and this can be utilized for one of the buildings. This land is within one-half mile of the railroad station of Dulce, N. Mex., where the agency is located. As these Indians are anxious for school facilities and have been peaceable and contented, I think steps should be taken at once to establish the school. The greatest drawback to the schools of this agency is that the Indians refuse to send their children. Now that they are in the right frame of mind, they should be assisted. The Indians at this subagency are furnished regular rations and annuity issues, so that the Government will have a very potent means of persuading them to keep their promises in case they show a disposition to evade them. Another advantage here is that the children all live close and no expense for transportation would be required.

Conclusion.—In conclusion I desire to say that while the affairs of this agency, and especially the schools, seem to be in a chaotic condition, no efforts will be spared by this office to remedy them as far as it is possible, with the support of the Office of Indian Affairs to do so. The supervising teacher, Mr. Charles E. Burton, is giving his entire time and attention to the work of improving the condition of the schools, and if he has the proper support of the Indian Office, which I do not in the least doubt, I am sure he will succeed. In making this report I have not covered up matters in the least, but, on the contrary, I have reported them exactly as I have found them. I ask the careful and considerate attention of your office, that my efforts may be seconded in remedying affairs to such an extent that this agency may be a credit to the service instead of otherwise.

Respectfully submitted.

N. S. WALPOLE,
United States Indian Agent.

INDIAN SCHOOLS.

The Indian industrial schools at Santa Fe and Albuquerque, supplemented by the several governmental schools at the various pueblos, are all doing fine work for the education of the Indian children. Nearly every Indian child in New Mexico is provided with the means of education, and the schools are very largely attended.

For many years it was difficult to obtain the consent of the parents for the education of their children at these public institutions, as they had much hesitancy in permitting their children to leave home and go under the control of the teachers. All this is now changed, and the parents are taking the greatest interest in the schools, in many instances showing an anxiety to have their children educated.

From present appearances, the majority of the Indian children of the Territory will be as well educated in a few years as the other youths of the Territory. The work being done in these institutions is such as to greatly improve the condition of these wards of the Republic, and will soon place them in a position to be self supporting.

SIR: In answer to your letter of the 12th inst., I have the honor to report as follows:

THE MESCALERO INDIAN AGENCY.

I assumed charge of this agency only four days ago, and consequently can give you only such data as I find on taking charge.

This agency is comprised of about 450,000 acres in Lincoln and Doña Ana Counties. There is very little arable land on the reservation. What there is, about 1,690 acres, the Indians have fenced, 800 acres of which they have under cultivation. There is some good grazing land on the reservation. The Indians have now on this land 1,000 horses, 20 mules, 60 burros, 40 cattle, 300 goats, and 4,000 sheep.

There are belonging to this tribe 444 Indians; 251 of them wear civilized dress and short hair, the balance, 193, wear the Indian style wholly or in part.

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There are 168 families. Of these 14 draw full rations, 58 draw only beef, and the remainder (94) receive nothing in the way of free rations or clothing from the Government. One hundred and forty-two can carry on an ordinary conversation in English, and 117 can read.

No land has been allotted to these Indians, but it is expected that soon allotment will be made and the reservation thrown open.

I have the honor to be, very respectfully,

WALTER McM. LUTTRELL,
United States Indian Agent.

His Excellency MIGUEL A. OTERO,
Governor of Territory of New Mexico.

ALBUQUERQUE, N. MEX., *August 16, 1898.*

DEAR SIR: I have the honor to make the following statement concerning the Albuquerque Indian school for the fiscal year ending June 30, 1898:

The total enrollment was 320, and the average attendance 301. This is as large a population as can be healthfully accommodated with our present plant.

A number of improvements have been made during the year, among which may be mentioned a new ring bath system for the pupils, the installation of electric lights, a new steel tank tower, the further development of our wells, whereby an abundant supply of pure water is obtained in place of the very bad water that we had heretofore.

The paramount need of the school for years has been a sewer system, and Congress at its last session appropriated $14,000 for the purpose. When this system is completed the sanitary conditions will be changed from poor to excellent.

The health of the school has been good, despite the fact that there have been very mild attacks of scarlet fever and measles. No deaths have occurred for more than two years.

The pupils have made commendable progress both in the schoolroom and in the industries. Among our employes who are doing good work are a shoemaker, harnessmaker, assistant seamstress, and assistant cook who have learned their trade here alone, and other pupils are nearing a state of efficiency that will enable them to assume similar responsibilities.

The industries taught are sewing, cooking, laundering, carpentry, harnessmaking, shoemaking, tailoring, farming, and simple work in blacksmithing. A manual training department has been lately added to the institution, and it promises to be an important factor in Indian education, as it is in the public schools of the larger cities of the country.

In conclusion, I am pleased to say that the Indian problem is somewhat nearer a solution than it was a year ago, and while it is difficult to measure accomplishment by years, the effect of the total work done is plainly discernible.

Very respectfully,

EDGAR A. ALLEN, *Superintendent.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fé, N. Mex.

GOVERNMENT INDIAN SCHOOL AT SANTA FE.

The Santa Fe Indian Industrial School is located about 2 miles south of the city of Santa Fe on the Albuquerque road. It was opened in October, 1890, with a capacity of 150 pupils, and was created as an Indian normal school in January, 1894.

Present capacity	250
Capacity when buildings now under construction are completed	300
Proposed capacity	600
Average attendance during 1897–98	209
Total enrollment during 1897–98	250

Industries taught are cooking, sewing, housekeeping, tailoring, shoemaking, blacksmithing, carpentering, laundering, and farming and gardening by irrigation.

Number of employes are 17 white, 22 Indian, and 25 paid pupils as helpers.

Farm consists of 106 acres; 10 acres consisting of 5 acres of school campus and 5 acres of garden under irrigation.

Lighting: Coal-oil lamps. Heating: Coal and wood stoves.

Under construction: Electric light. Proposed heating: Steam.

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The buildings are of brick, well and substantially built, and are named in order of size, as follows: Main school building, in form of Greek cross; central building 40 by 160 feet, two stories; each wing 40 by 140 feet, two stories.

Employes' building, brick, two stories, with storeroom, kitchen, dining room, and 14 employes' rooms, each with a large alcove; 2 bathrooms.

Hospital: Two stories with 10 rooms, dispensatory, and 2 bathrooms.

Laundry: One story, 3 rooms, and engine room; well equipped with steam washer, mangle, stationary tubs, centrifugal drier, etc.

Shoe and tailor shop: Two stories, 4 rooms. Tailor and 8 apprentices; shoemaker and 8 apprentices.

Store: One story, with basement.

Blacksmith shop: One story, frame. Capacity, 1 blacksmith and 6 apprentices.

Carpenter shop: One story, frame. Capacity, 1 carpenter and 6 apprentices.

All necessary barns, sheds, hose house, oil room, hennery, etc.

Water supply: From city water works; is abundant for all school needs and the irrigating of 10 acres.

Sewerage ample and in good condition.

Respectfully submitted.

ANDREW H. VIETS, *Superintendent.*

UNITED STATES COURT OF PRIVATE LAND CLAIMS.

SANTA FE, N. MEX., *August 5, 1898.*

MY DEAR SIR: Pursuant to your request contained in your letter of July 26, I beg to inclose herewith statements showing business transacted by the United States Court of Private Land Claims during the period beginning July 1, 1897, and ending July 6, 1898.

The statements are brought up to the date last named, for the reason that the last term of the court ended on that day.

All of the grants referred to in the statements are located within the Territory of New Mexico.

I remain, very respectfully,

MATT G. REYNOLDS,
United States Attorney, Court of Private Land Claims.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

STATEMENT NO. 1.

List of cases decided by the Court of Private Land Claims between July 1, 1897, and July 6, 1898.

P. L. C. docket No.	Name of grant.	Claimed.	Confirmed.	Rejected.
		Acres.	*Acres.*	*Acres.*
69 209	Lucero Spring or Ojito de los Medanos	69,444	.....	69,444
85	Salvador Gonzales	23,661	200	23,461
90 269	San Antonio de la Huertas	150,000	20,000	130,000
133	Pueblo of Laguna	125,225	17.361	107,864
136 196 210	El Rito	511,000	.....	511,000
141	Vallecito de San Antonio	38,000	.....	38,000
142 204 236	Vallecito de Lobato	114,400	.....	114,400
149	Don Fernando de Taos	38,400	1,000	37,400
214 243	Cieneguilla (Santa Fe County)	45,245	5,000	40,245
264	Bartolome Sanches	10,000	10,000	.....
93	Salvador Lovato	2,500	.....	2,500
102	Antonio Armijo	900	.....	900
104	Archuleta and Gonzales	1,000	.....	1,000
113	Los Chupaderos de la Lagunita	4,340	.....	4,340
117	José Antonio Lucero	1,000	.....	1,000
119	Catarina Maese	300	.....	300
120	Juan Felipe Rodriguez	2,000	.....	2,000
121	De Vera	300	.....	300
124	Juan José Archuleta	500	.....	500

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STATEMENT No. 1—Continued.

List of claims decided by the Court of Private Land Claims between July 1, 1897, and July 6, 1898—Continued.

P. L. C. docket No.	Name of grant.	Claimed.	Confirmed.	Rejected.
		Acres.	*Acres.*	*Acres.*
125	Juan Antonio Flores	1,500		1,500
145	Arquito	2,000		2,000
171	Pueblo Quemado	900		900
174	José Ignacio Martin	500		500
175	Felipe Medina	300		300
176	Manuel Fernandez	300		300
187	Felipe Tafoya	500		500
188	Manuel Tenorio	600		600
189	Tomas Tapia	500		500
190	Diego Arias de Quiros	2,000		2,000
191	Alfonso Rael de Aguilar	500		500
192	Felipe Pacheco	500		500
199	José Manuel Giltome	6,000		6,000
200	El Alamo	2,000		2,000
254	Juan Estaban Garcia de Noriega	5,000		5,000
58	Bartolome Baca			47,740
123	Rio Tesuque			1,100
259	Ojo de San Jose	10,000		10,000
205	Cañada de Cochiti		10,000	
81	El Pino	9,000		9,000
139	Miranda	4,658		4,658
160	Ancon Colorado	800		800
170	Sanguijuela	20,000		20,000
173	Embudo	25,000		25,000
134	Santo Domingo and San Felipe	20,000	1,200	18,800
184	Diego Gallego	3,000		3,000
185				
179	Juan Bautista Valdez	150,000	1,200	148,800
181	Santa Cruz	60,000		60,000
224	Rancho XXX El Rito	50,000		50,000
232	Cristoval Crespin	3,000		3,000
234	Alfonso Rael de Aguilar	17,361		17,361
235	Antonio de Salazar	23,351		23,351
237	Juan de Mestas	1,686		1,686
242	Las Manuelitas	200,000		200,000
248	El Coyote	434,028		434,028
249	Manuel Garcia de las Ribas	7,577		7,577
250	Cristobal de Torres	205,615		205,615
253	Juan de Ulibarri	500		500
255	José Antonio Torres	5,000		5,000
261	Antonio de Ulibarri	1,000		1,000
266	Juan de Tafoya	86,000		86,000
267	Santa Rosa de Cubero	5,000	5,000	
92	José Garcia			109
	Total	2,503,891	70,961	2,491,879

STATEMENT No. 2.

Surveys of grants approved by the Court of Private Land Claims from July 1, 1897, to July 6, 1898.

P. L. C. docket No.	Name of grant.	Area in survey.
78	Los Cerrillos	1,478.81
79	Sitio de los Cerrillos	572.4
82	Sitio de Juana Lopez	1,085.53
45	Town of Atrisco	82,728.72
86	Juan de Gabaldon	10,690.05
95	Ojo de Borrego	16,079.80
195		
1	Cubero	16,490.94
34	Ignacio Chaves	47,258.71
a 38	Cañada de los Alamos	4,106.66
76		
207		
	Total	180,491.62

a Consolidated.

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STATEMENT No. 3.

List of grants ordered resurveyed by the Court of Private Land Claims from July 1, 1897, to July 6, 1898.

P. L. C. docket No.	Name of grant.
16	Francisca Antonia Gijoea.
55	Sevilleta.
73	Pajarito.
17	Cañada de Santa Clara.
5	Arroyo Hondo.
15	Antonio Sedillo.
54	Galisteo.

STATEMENT No. 4.

List of cases tried and under advisement by the Court of Private Land Claims.

P. L. C. docket No.	Name of grant.
194	Santa Cruz.
165	Abo Mine.
206	
137	Santo Tomas de Iturbide.
138	Jose Manuel Sanchez Baca.
150	Refugio Colony.
193	
151	Mesilla Colony.

DEAR SIR: Yours of July 18, requesting a summary of the business of the United States attorney's office received. In reply I submit the following:

Number of civil cases terminated during fiscal year	18
Judgments for United States	10
Judgments against the United States	6
Appealed to Supreme Court	2
Number of civil cases pending July 1, 1898	17
Number of criminal prosecutions terminated during the fiscal year ending June 30	109
Number of convictions	47
Number of acquittals	17
Nol. pros., discontinued, or quashed	45
Number of criminal prosecutions pending July 1, 1898	42

Respectfully,

W. B. CHILDERS,
United States Attorney.

Hon. M. A. OTERO,
Governor, Santa Fe, N. Mex.

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SANTA FE, N. MEX., *August 20, 1898.*

DEAR SIR: Responding to your favor of the 17th inst., asking for a report of the condition of this office at the present time, I beg herewith to inclose the same, and trust that it will be to your satisfaction.

I beg to remain, yours, very respectfully,

A. M. BERGERE.

Governor M. A. OTERO.

Report of the condition of the office of the first judicial district court from July 1, 1897, to June 30, 1898.

Territorial civil cases in force on July 1, 1897	146	
Territorial civil cases filed from July 1, 1897, to June 30, 1898	188	
		334
Cases disposed of by trial	79	
Cases dismissed	45	
		124
Balance of cases pending on July 1, 1898		210
Territorial criminal cases in force on July 1, 1897	75	
Territorial criminal cases filed from July 1, 1897, to June 30, 1898	88	
		163
Cases disposed of by trial	39	
Cases dismissed	52	
		91
Balance of cases pending on July 1, 1898		72
United States civil cases in force on July 1, 1897		9
United States civil cases filed from July 1, 1897, to June 30, 1898		None.
Dismissed or disposed of		None.
Balance of cases pending on July 1, 1898		9
United States criminal cases in force on July 1, 1897	12	
United States criminal cases filed from July 1, 1897, to June 30, 1898	10	
		22
Cases disposed of by trial	9	
Cases dismissed	11	
		20
Balance of cases pending July 1, 1898		2

SIR: Replying to your letter of the 8th inst., I have the honor to submit the following report:

VALENCIA COUNTY.

Criminal cases pending on docket July 1, 1897		22
Criminal cases instituted during the year ending June 30, 1898		14
Total		36
Disposed of:		
Dismissals, 12; acquittals, 2		14
Balance cases pending July 1, 1898		22
Civil cases pending July 1, 1897:		
Law, 28; chancery, 2		30
Cases filed during the year ending June 30, 1898:		
Law, 8; chancery 1 (prior to adoption of code)	9	
Civil actions (subsequent to adoption of code)	27	
		36
Total		66
Disposed of:		
Dismissals, 7; trials, 15		22
Balance cases pending July 1, 1898		44

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BERNALILLO COUNTY.

Criminal cases pending on docket July 1, 1897	41
Criminal cases instituted during the year ending June 30, 1898	76
Total	117
Disposed of:	
Convictions, 32; dismissals, 10; acquittals, 3	45
Balance cases pending July 1, 1898	72
Civil cases pending July 1, 1897:	
Law, 161; chancery, 61	222
Cases filed during year ending June 30, 1898:	
Law, 18; chancery, 10 (prior to adoption of code) 28	
Civil actions (subsequent to adoption of code) 252	
	280
Total	502
Disposed of:	
Dismissals, 45; trials, 168	213
Balance cases pending July 1, 1898	289
United States criminal cases pending July 1, 1897	3
United States cases instituted during year ending June 30, 1898	10
Total	13
Disposed of:	
Dismissals, 2; acquittals, 1; convictions, 6	9
Balance cases pending July 1, 1898	4
Civil cases pending July 1, 1897:	
Law, 13; chancery, 2	15
Cases instituted during year ending June 30, 1898	1
Total cases pending July 1, 1898	16

Respectfully,

HARRY P. OWEN, *Clerk.*

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Causes pending in the fourth judicial district on June 30, 1897, new cases brought up to June 30, 1898, and disposition of same to June 30, 1898.

UNITED STATES.

CIVIL.

Pending June 30, 1897	6
New cases	1
	7
Disposed of (judgments)	5
Pending June 30, 1898	2

CRIMINAL.

Pending June 30, 1897	10
New cases	31
	41
Disposed of:	
Dismissed, 15; trial, 14	29
Pending June 30, 1898	12

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SAN MIGUEL COUNTY.

CRIMINAL.

Pending June 30, 1897		54
New cases		118
		172
Disposed of:		
Trial and pleas	17	
Dismissed	21	
Change of venue	2	
		40
Pending June 30, 1898		132

CHANCERY.

Pending June 30, 1897		93
New cases		27
		120
Disposed of:		
Trial	20	
Dismissed	3	
		23
Pending June 30, 1898		97

LAW.

Pending June 30, 1897		186
New cases		111
		297
Disposed of:		
By trial	41	
Dismissed	12	
		53
Pending June 30, 1898		244

GUADALOUPE COUNTY.

CRIMINAL.

Pending June 30, 1897		27
New cases		2
Pending June 30, 1898		29

LAW.

Pending June 30, 1897		6
New cases		6
Pending June 30, 1898		12

CHANCERY.

Pending June 30, 1897		6
New cases		3
		9
Disposed of (trial)		1
Pending June 30, 1898		8

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UNION COUNTY.

CRIMINAL.

Pending June 30, 1897		25
New cases		56
		81
Disposed of:		
Dismissed	23	
Trial or plea	23	
		46
Pending June 30, 1898		35

LAW.

Pending June 30, 1897		20
New cases		24
		44
Disposed of:		
Trial or plea	13	
Dismissed	9	
		22
Pending June 30, 1898		22

CHANCERY.

Pending June 30, 1897		10
New cases		11
		21
Disposed of:		
Trial or plea	7	
Dismissed	5	
		12
Pending June 30, 1898		9

MORA COUNTY.

CRIMINAL.

Pending June 30, 1897		34
New cases		3
		37
Disposed of (trial)		1
Pending June 30, 1898		36

CHANCERY.

Pending June 30, 1897		32
New cases		7
		39
Disposed of:		
Trial	1	
Dismissed	2	
		3
Pending June 30, 1898		36

LAW.

Pending June 30, 1897		37
New cases		11
		48
Disposed of:		
Trial	5	
Dismissed	1	
		6
Pending June 30, 1898		42

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COLFAX COUNTY.

CRIMINAL.

Pending June 30, 1897		64
New cases		55
		119
Disposed of:		
Trial or plea	28	
Dismissed	25	
		53
Pending June 30, 1898		66

CHANCERY.

Pending June 30, 1897		47
New cases		19
		66
Disposed of:		
Trial or plea	15	
Dismissed	5	
		20
Pending June 30, 1898		46

LAW.

Pending June 30, 1897		54
New cases		25
		79
Disposed of:		
Trial	7	
Dismissed	8	
		15
Pending June 30, 1898		64

SOCORRO, N. MEX.

SIR: Below please find an abstract of the cases now pending in the fifth judicial district court:

CIVIL CASES.

Pending in this Territory on July 1, 1897 (Territorial)	284
New cases filed between July 1, 1897, and July 1, 1898	204
Total pending during the year	488
Disposed of during the year	184
Pending on July 1, 1898	304

CRIMINAL CASES.

Cases pending July 1, 1897	94
Filed during the year	145
Total	239
Disposed of	142
Pending July 1, 1898	97

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UNITED STATES CIVIL CASES.

Cases pending July 1, 1897	12
Filed during the year	5
Total	17
Disposed of	14
Pending July 1, 1898	3

UNITED STATES CRIMINAL CASES.

Cases pending July 1, 1897	18
Filed during the year	10
Total	28
Disposed of	23
Pending July 1, 1898	5

Very respectfully,

JOHN E. GRIFFITH, *Clerk.*

The GOVERNOR OF NEW MEXICO,
Santa Fe, N. Mex.

REPORT OF THE CLERK OF THE SUPREME COURT OF NEW MEXICO.

SIR: In compliance with your request for information regarding the business of the supreme court of the Territory of New Mexico, I respectfully submit the following statement:

At the beginning of the term of the supreme court just ended there were on the dockets of the court 22 cases which had been left untried since the preceding terms, and 57 cases were filed at the present term. The court worked continually during the whole term of the court, holding longer sessions than any of the preceding courts have ever held, and disposing of a greater amount of business. During the last term there were 39 cases argued and submitted to the court for its consideration, 1 case was stricken from the docket, 3 were dismissed, and the court handed down opinions in 23 cases involving great points of interest to the public, and 25 cases were finally disposed of.

The supreme court also entered an order changing the place of holding the term of the court in the third judicial district from Silver City to Las Cruces, in the said district. The court expects to hold an adjourned session in order to clear the docket of the cases now remaining untried.

The files of this office are not in a very desirable condition, owing to the fact that the office is not provided with its permanent quarters and a vault in which to keep all the papers of importance; but it is hoped that by the next term of the court the new capitol, now under course of construction, will be complete, in which building the clerk of the supreme court will be provided with all that is necessary to keep the papers in perfect order, so that reference can be made to them with no trouble.

The records of my office show that at this date there are 125 members of the bar of New Mexico. A large majority of the attorneys are members of the New Mexico Bar Association, and the officers of said association for the year 1898–99 are as follows: President, Hon. R. E. Twitchell, Las Vegas, N. Mex.; secretary, Hon. E. L. Bartlett, Santa Fe, N. Mex.; treasurer, Hon. George W. Knaebel, Santa Fe, N. Mex.

There are also five vice-presidents (one from each judicial district), as follows: First district, Hon. E. A. Fiske, Santa Fe, N. Mex.; second district, Hon. E. W. Dobson, Albuquerque, N. Mex.; third district, Hon. T. F. Conway, Silver City, N. Mex.; fourth district, Hon. W. C. Wrigley, Raton, N. Mex.; fifth district, Hon. A. A. Freeman, Eddy, N. Mex.

During the year 1898 there have been eight attorneys admitted to practice before the courts of New Mexico.

Trusting that this information will be satisfactory, and awaiting your further commands, I remain,

Yours, most respectfully,

JOSE D. SENA,
Clerk Supreme Court of New Mexico.

His Excellency MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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OFFICE OF THE CAPITOL REBUILDING BOARD,
Santa Fe, N. Mex., September 24, 1898.

SIR: In compliance with your request for a report from the capitol rebuilding board of its work of rebuilding the Territorial capitol, I have the honor, in behalf of the board, to respectfully report that the work is progressing as rapidly, consistent with good workmanship, as possible, taking into consideration the amount of money appropriated by the legislature for the purpose. It has been and still is the earnest desire of the board to keep within the appropriation of $75,000, and to this end every saving has been and will be made, and for this reason we have found it impossible to rush the work because of the additional expense such speed would entail. The building is now almost ready for the roof, but it will necessarily take several months before the interior can be made ready and the structure completed, and it is regretted that it will not be ready for the meeting of the coming session of the legislature. The architects, Messrs I. H. & W. M. Rapp, have proved themselves thoroughly competent and reliable in every respect, and we take great pleasure in assuring your excellency that the new capitol will be the pride of the Territory. We found it necessary to face the building with buff Roman brick above the first story, for the reason that the stone at Lamy was not of proper quality in sufficient quantities to be used for such purpose; but that necessity, in our opinion, will prove the Territory's gain, as the building will present, when finished, a much better appearance than had it been entirely faced with the stone mentioned, the contrast between the first story of stone and the other stories of the pressed brick mentioned being very pleasing. While it is perhaps possible that the building can be completed within the amount realized from the appropriation for the purpose, and while it shall be the aim of the board to attain this result, it is proper to say at this time that there is grave doubt as to our ability to do so, certainly of our ability to furnish the building within the amount available. If after having done our best we find that a further amount is still necessary, we shall report the facts fully to your excellency for presentation to the coming legislature. We believe that that body and the people of New Mexico will approve our efforts to secure them a capitol building first class from foundation to dome, and if in attaining this end a little more cost than at first contemplated is incurred, we are confident that the additional expense will be readily approved and provided for by the people upon a full presentation of the facts. With the facilities at hand we confidently expect to turn over upon completion a building whose value shall be at least double the amount of money actually put into it, and whose equipment and construction shall be in all respects worthy of our prosperous and growing Territory.

Respectfully submitted.

F. A. MANZANARES,
President Capitol Rebuilding Board.

His Excellency MIGUEL A. OTERO,
Governor of New Mexico.

TERRITORIAL BOARD OF HEALTH.

LAS VEGAS, N. MEX., *September 12, 1898.*

DEAR SIR: In reply to your request of recent date with reference to a report from the Territorial board of health, I beg to submit the following:

The number of licenses issued to date are 113; number of regular physicians, 98; homeopaths, 13; eclectic, 2, making a total of 113 practicing physicians in our Territory.

Those physicians engaged in general practice have their county medical societies and a Territorial association which holds regular annual sessions. The standard of the profession is high, and graduates from the best medical colleges in the world are to be found among them. The medical profession of New Mexico keeps abreast of the times.

The requirements of the Territorial board of health for physicians desiring to practice medicine in New Mexico are as follows: "The applicant must present his high-school certificate, or its equivalent; must show evidence that he has taken four courses of study, of which no two courses were taken in the same year, or he must pass a satisfactory examination by this board of health.

Members of the board of health.—W. R. Tipton, M. D., president, Las Vegas, N. Mex.; J. W. Kinsinger, M. D., vice-president, Roswell, N. Mex.; G. S. Easterday, M. D., treasurer, Albuquerque, N. Mex.; J. M. Cunningham, M. D., secretary, East Las Vegas, N. Mex.; J. H. Sloan, M. D., Santa Fe, N. Mex.; William Eggert, M. D., Santa Fe, N. Mex.; C. B. Kohlhousen, M. D., Raton, N. Mex.

Yours, very respectfully,

J. M. CUNNINGHAM, M. D.,
Secretary Board of Health.

His Excellency, Governor M. A. OTERO,
Santa Fe, N. Mex.

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NEW MEXICO BOARD OF DENTAL EXAMINERS.

The National Association of Dental Examiners, of which New Mexico is a member, is composed of the boards of examiners of the various States and Territories. The object of the association is the strengthening and assisting of each individual board and the raising of the standard of dental education.

Through the national association the examining boards of the whole country are kept in touch, and there can be no doubt of the benefit to each board by the association of all.

In accordance with chapter 60, section 10, General Laws of New Mexico for 1893, the New Mexico board of dental examiners has the honor to submit its fifth annual report, which is as follows:

The sixth annual meeting was held at Silver City on September 2 and 3, 1898.

There were present Drs. Olney, Bearup, White, and Manley. Dr. Chamberlain's duties as first lieutenant in the Territorial Volunteers at Whipple Barracks, Ariz., prevented his attendance.

There were 8 applications for registration, all graduates of colleges recognized as reputable. Of these, 5 were granted certificates, and 3 were refused for the reason that they had left the Territory since filing their applications. One application was from a college not recognized, which was refused. (Chap. 60, sec. 5, Laws of New Mexico, 1893.)

In connection with this case the following resolution was passed: "*Resolved*, That this board will not grant, without examination, a certificate to a graduate of any college not conforming to the rules as adopted by the National Association of Dental Examiners."

There were 2 candidates for examination; both failed to pass and were refused registration. Both of these men expressed their appreciation of the fairness of the examination and agreed to meet the board again at its next annual meeting.

Since the law pertaining to the practice of dentistry in New Mexico went into effect in 1893, 34 permanent certificates have been granted, 29 temporary certificates, and 5 examinations have been given, 3 passing successfully and 2 failing.

RECEIPTS.

Received from 8 applications for registration	$40
Received from 3 applications for examination	75
Cash with treasurer	118
Total	233
Expenditures	233

Respectfully submitted.

F. E. OLNEY, *President.*
D. W. MANLEY, *Secretary.*

His Excellency, Governor M. A. OTERO,
Santa Fe, N. Mex.

BOARD OF PHARMACY.

W. C. Porterfield, secretary of the board of pharmacy of New Mexico, submits the following statement, which is the eighth annual report of said board:

Number of pharmacists registered, as shown by last report	77
Number of pharmacists registered since last report	18
Number holding minor certificates	10
Total	105
Dropped for nonpayment of renewal fees	11
Number now registered	94

SURVEYOR-GENERAL.

The following is taken from the annual report of the United States surveyor-general for the district of New Mexico, June 30, 1898:

During the said fiscal year 12 contracts (numbered 314 to 325, both inclusive) and 11 contracts under special instructions have been awarded for the survey of public lands, private land claims, or grants (confirmed by the Court of Private Land

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Claims) and small holding claims (filed under the provisions of sections 16 and 17 of the act of Congress approved March 3, 1891, and amended February 21, 1893.) Of said contracts 11 are for the survey of public lands, and 12 for the survey and corrected surveys of private land claims, which have been confirmed by the Court of Private Land Claims. Some of the contracts for surveys of public lands include the survey of small holding claims situate within the stated townships to be surveyed under said contracts. Four contracts for the survey of public lands are payable from the appropriation for the survey of public lands per act of June 4, 1897, for the fiscal year ending June 30, 1898. Seven contracts or sets of special instructions, providing for retrenchments and resurveys, are payable from the appropriation of $15,000 for resurveys per act of June 4, 1897, for the fiscal year ending June 30, 1898. Nine contracts and 3 sets of special instructions, providing for surveys and corrected surveys of private land claims, are payable from the appropriation of $15,000 per act of June 4, 1897, for the survey of confirmed private land claims in designated States and Territories. The total number of miles, as shown by returns, 2,401 miles, 74 chains, and 88 links.

During the fiscal year the following letters, documents, plats, field notes, and other papers, briefed and recorded in total, are 15,684.

Tracings and descriptive lists, plats, etc., have been furnished the district land offices in this Territory as follows:

Santa Fe	118
Las Cruces	24
Roswell	4
Total	146

MINING SURVEYS.

During the said fiscal year there has been deposited on account of the surveys and amended surveys of mining claims $2,170, and applications were duly made for the survey of 71 mining claims, the amended survey of 2 mining claims, and reports on 52 placer mining claims.

During the said fiscal year 54 mineral monuments, located in various unsurveyed townships in this district, have been platted.

The surveyor-general urges an appropriation for the restoration of mineral monuments and their proper connection with public surveys and with each other, stating that the major portion of the mineral monuments in this district are upon unsurveyed ground, and mining claims are connected with said mineral monuments, these monuments being established many years ago, without sufficient regard to their permanence in construction, and insufficiently witnessed by bearings and permanent objects. In most cases a mound of stone or a post was generally used. During the lapse of time since they were established many of these monuments have become obliterated or have been destroyed, and as said monuments are the official points of reference by which to fix the locus of all surveyed and patented mining claims in this district it is of the greatest importance that they be properly perpetuated; and where the same have been obliterated they should be reestablished with due regard to permanency, and their locus witnessed by connecting them with public surveys, with each other, and with natural objects.

The Court of Private Land Claims has, during the fiscal year, passed upon the validity of many private land claims, some of which have been confirmed and some rejected by said court. There are still about 74 private land claims to be tried by the Court of Private Land Claims. Forty-six of these grants contain approximately 5,000,000 and the 74 grants contain approximately 10,000,000 acres. It is safe to predict that 50 or 60 per cent of these grants will be confirmed in part or in their entirety, and from the best information obtainable by this office I believe that about 45 of these grants will be confirmed. There are some 18 or 20 cases on appeal to the United States Supreme Court, and a large number of other grants which have been confirmed, but no appeals as yet taken, which will have to be surveyed at an early date; all of which private land claims should be adjudicated by the Court of Private Land Claims and all unfinished business of said court completed within the life of the court.

SMALL HOLDING CLAIMS.

There have been 3,205 small holding claims filed in this office under the provisions of sections 16 and 17 of the act of March 3, 1891, amended February 21, 1893, for tracts of land not exceeding 160 acres each. There are about 1,800 small holding applications on file in this office for tracts of land in unsurveyed townships and within the boundaries of unconfirmed grants.

MINING DISTRICTS.

Number of mining districts platted	77
Number of plats comprising said districts	138

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UNITED STATES LAND OFFICES.

Following are the reports for several land offices:

CLAYTON, N. MEX., *July 12, 1898.*

SIR: We have the honor to transmit to you our statement of the business transacted at this office for the fiscal year ending June 30, 1898; also lands appropriated and unappropriated in this land district for the year ending June 30, 1898.

Very respectfully,

EDWARD W. FOX, *Register.*
ALBERT W. THOMPSON, *Receiver.*

Governor M. A. OTERO,
Santa Fe, N. Mex.

Class of entries, number, acres, etc., for Clayton land district.

Class of entries.	No.	Acres.	Commissions.	Fees.	Amount.
Excess payment on homestead and other entries and locations	15	35.01			$43.71
Final timber claims commuted	1	160.00			200.00
Original entries under desert act	2	278.95			69.73
Homesteads commuted to cash (R. S. 2301)	2	240.00			300.00
Sale of isolated tracts (section 2455, R. S.)	1	40.00			50.00
Total cash sales	21	753.96			663.44
Original homestead entries	287	45,139.66	$1,693.32	$2,845.00	4,544.82
Additional homestead entries to No. 766	1	40.00	1.50	5.00	
Final homesteads	155	24,476.36	917.49		917.49
Final timber claims	6	960.00	24.00		24.00
Testimony received				342.40	342.40
Coal declarations	4	640.77	12.00		12.00
Total, all classes	474	72,010.75	2,648.31	3,192.40	6,504.15
Salary, fees, and commissions, register and receiver					4,003.98
Depositing public moneys					1.10
Incidental expenses					247.36
Total					4,252.44

County.	Area in acres unappropriated and unreserved.			Area in acres appropriated.	Total area of land surface of the county in land district.
	Surveyed.	Unsurveyed.	Total.		
Colfax	547,324		547,324	82,676	630,000
Guadaloupe	2,642,842	115,380	2,758,222	183,778	2,942,000
Mora	322,551		322,551	16,449	339,000
San Miguel	733,047		733,047	62,953	796,000
Union	3,424,180	370,020	3,794,200	345,800	4,140,000
Total	7,669,944	485,400	8,155,344	691,656	8,847,000

LAS CRUCES, N. MEX., *July 21, 1898.*

SIR: I have the honor to transmit to you, inclosed herewith, a copy of the register's annual report of the public domain within the Las Cruces land district for the year ending June 30, 1898.

Very respectfully,

EMIL SOLIGNÁC, *Register.*

His Excellency MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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Counties, area, etc., of Las Cruces land district.

County.	Area in acres unappropriated and unreserved.			Area in acres reserved.	Area in acres disposed of.	Total area of land space in land district.
	Surveyed.	Unsurveyed.	Total.			
Donna Ana	4,113,367	682,445	4,795.812	335,378	121,810	5,253,000
Grant	3,857,453	1,472,577	5,330,030	7,414	648,556	5,986,000
Lincoln	67,859	251,825	319,684	70,000	10,316	400,000
Sierra	1,527,183	274,379	1,801,562	74,875	96,563	1,973,000
Socorro	5,196,518	2,076,501	7,273,019	337,459	127,522	7,738,000
Total	14,762,380	4,757,527	19,520,107	825,126	1,004,767	21,350,000

ROSWELL, N. MEX., *July 21, 1898.*

SIR: In compliance with your letter of the 19th instant, we have the honor to transmit herewith statement of the business of the United States land office at Roswell, N. Mex., for the fiscal year ending June 30, 1898.

Very respectfully,

HOWARD LELAND, *Register.*
DAVID L. GEYER, *Receiver.*

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Statement of the business transacted at Roswell, N. Mex., during the fiscal year ending June 30, 1898.

Class of entry.	No.	Acres.	Commissions.	Fees.	Amount.
Sales of land subject to preemption entry	1	160.00			(a)
Sales of coal lands	2	320.00			$3,200.00
Sales of mineral land	1	.594			5.00
Excess payments on homestead entries	3	4.08			5.12
Original entries under desert-land act	17	2,674.35			668.59
Final entries under desert-land act	10	[2,039.79]			1,599.80
Homestead entries commuted to cash	4	[600.00]			750.00
Total cash sales	38	3,159.024			6,228.51
Original homestead entries	77	11,462.81	$429.88	$730.00	
Final homestead entries	42	[6,264.29]	234.93		
Coal-land applications	35			105.00	
Final timber-culture entries	2	[320.00]	8.00		
Fees received for reducing testimony to writing				198.51	
Cancellation fees				5.00	
Total of all classes of entries and amounts received	194	14,621.834	672.81	1,038.51	6,228.51

a Paid for in 1893. Allowed by letter "G," April 26, 1898.

SANTA FE, N. MEX., *July 19, 1898.*

SIR: As per request of your letter of the 15th instant, we have the honor to transmit herewith an abstract showing the business transacted in this office during the fiscal year ending June 30, 1898.

The areas of all lands in our district subject to settlement entry or filing are reported in the first, second, and third columns, those surveyed in the first, those unsurveyed in the second, and the aggregates surveyed and unsurveyed in the third. In the fourth column are reported the area of all lands reserved for any purpose, which, however, may be eventually restored to the public domain, such as unconfirmed grants. The areas embraced in all selections, filings and entries, perfected and unperfected, as also grants confirmed during the fiscal year, are reported in the fifth and sixth columns. In the eighth column is reported the business transacted in the office during the fiscal year outside of confirmed grants.

Respectfully,

MANUEL R. OTERO, *Register.*
E. F. HOBART, *Receiver.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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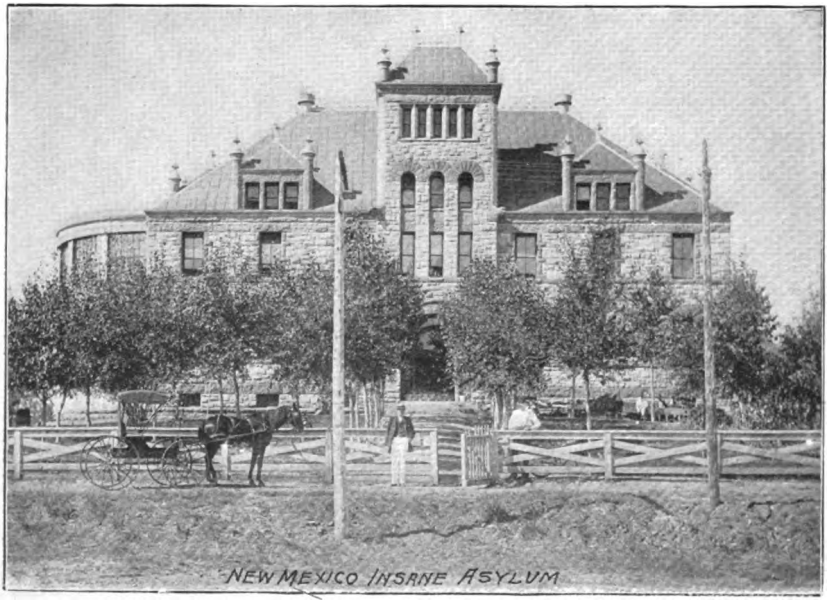

INSANE ASYLUM, LAS VEGAS.

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County.	Area unappropriated and unreserved.			Area reserved.	Area appropriated.	Area appropriated during fiscal year 1898.	Total area of land surface of the county in land district.	Area appropriated during fiscal year ending June 30, 1898, outside of confirmed grants.
	Surveyed.	Unsurveyed.	Total.					
Bernalillo	1,858,594	430,690	2,289,284	949,037	2,190,940	277,739	5,707,000	6,166
Colfax	230,461	23,040	253,501	.....	1,538,205	3,139	1,794,845	3,139
Guadaloupe	1,045,233	10,000	1,055,233	.....	530,280	4,247	1,589,760	4,247
Mora	414,055	102,160	516,215	.....	727,900	4,885	1,249,000	4,885
Rio Arriba	1,484,529	799,400	2,283,929	841,361	1,131,640	2,070	4,259,000	2,070
San Juan	1,025,184	484,440	1,509,624	1,958,400	225,040	3,936	3,607,000	3,936
San Miguel	845,952	89,860	935,812	202,550	1,176,190	16,448	2,331,000	16,448
Santa Fe	558,726	60,136	618,862	188,900	556,463	18,174	1,382,400	4,325
Socorro	1,129,903	128,080	1,257,983	.....	890,017	.....	2,148,000	.....
Taos	304,430	358,720	663,151	119,931	668,967	17,952	1,470,000	1,600
Valencia	2,391,812	313,620	2,705,432	634,563	2,491,668	17,337	5,849,000	846
Total	11,282,879	2,800,147	14,089,026	4,894,742	12,127,310	365,927	31,477,005	47,662

NEW MEXICO INSANE ASYLUM.

LAS VEGAS, N. MEX., *August 1, 1898.*

SIR: In compliance with your request, we hand you herewith our report of the New Mexico Insane Asylum for the year ending June 30, 1898.

Since our last report we have completed the new addition to the asylum known as the south wing and passage.

This addition was badly needed on account of the overcrowded condition in what is known as the administration building.

We have been obliged to house all of the patients in the latter building, besides furnishing quarters for the steward, matron, and attendants in the same building, thereby making it very unpleasant for the latter, and crowding the patients into sleeping quarters entirely too close for their proper treatment.

Arrangements for lighting the new building, as well as the old one, by electricity, have been made with the Light and Fuel Company, of Las Vegas, on very favorable terms, and we hope in a week or two that they will have the wires run and all connections made, thereby enabling us to move into our new quarters without further delay.

It is our intention, or rather our wish, to thoroughly overhaul the administration building from top to basement, if we can induce the next legislature to furnish us with the necessary funds.

This building has been constantly in use ever since the asylum was opened in May, 1893, and should now have some extensive repairs and alterations of the interior arrangement. However, we will go more into detail regarding this matter, and our needs for the future, in our report to you next November, a description of the new building being more appropriate at this time, coupled with a statement of the very satisfactory progress we have made during the past year.

The south wing and passage were designed and erected under the supervision of Messrs. I. H. & W. M. Rapp, architects, and we draw largely on notes furnished by them in the following description:

The addition known as the south wing of the New Mexico Insane Asylum has a southern exposure of 164 feet frontage and 47½ feet of depth, and contains three stories, basement and attic. The basement is used for heating and ventilating trunks, also for storage and shops. The attic is occupied with the ventilating ducts and tank rooms. The foundation is built of white sandstone; the superstructure of the Santa Fe penitentiary brick, excepting the face course of the south and east fronts, which consist of pressed brick. All the interior walls throughout are of brick, and every care has been exercised to make the building a slow burning construction. Each corridor is fitted with a rack containing 75 feet of hose connected to a stand pipe carrying the water-works pressure.

Traversing the whole length of the building on each floor is a corridor, 15 feet wide, and intersecting at the middle is a sun room, 20 feet wide. These spacious apartments were designed for the comfort of the inmates, who are compelled to be in the building a considerable portion of the time. Off this corridor are the 27 rooms for patients, 2 dormitories, toilet and bath rooms, on each floor. Each room is well lighted, with a heavily-guarded window, and contains 80 square feet of floor surface. The dormitories will comfortably admit six beds each.

The floors throughout are made of narrow, perpendicular grain, yellow pine, filled

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with a nonabsorbent solution, which aids materially in cleansing. Temporarily the third floor has been divided and arranged into two violent wards, with extra heavy guards for all the windows, and iron-grating doors. It is the ultimate intention to remove these wards from the building to isolate wards.

Each floor has its bath and toilet room, with cement floor, supported on vaulted masonry. The fixtures are of enameled cast iron, and are supplied with cold water from the 4,000 gallon tank in the attic, and with hot water from the heater in the power house. The shower and needle baths, which are in addition to the tub baths, are incased in heavy galvanized-steel stalls; and with the mixing chamber, thermometer, and controlling valves, enable the attendant to adjust to a degree the temperature of the water.

A feature worthy of mention is the master key or interlocking system, controlling all the locks in the building. Each door of each ward has its own key, operating that lock alone; there then is a master key operating all the locks in that ward, but it will not operate the locks in any other ward. All the wards are then put under one master key, held only by the steward and medical superintendent.

There are two stairways incased in brick walls extending from the basement to the third story, and located at each end of the building, to guard against any portion of the building being cut off in event of accident by fire. These stairways connect with the entrance to the building and to the two-story and basement passageways leading to the dining rooms and the administration building (which the old building is being converted into). An extension of 20 by 25 feet has just been completed, with its pantries, which adds at least one-third to the seating capacity of the old dining room.

The new building contains 82 rooms for patients and attendants, 6 dormitories, and 4 bath and toilet rooms.

The power house and laundry is 50 by 30 feet, 25 feet high, with smoke stack 85 feet high, and is located 55 feet from the new building and 75 feet from the administration building, being connected to each with a tunnel 3½ by 6 feet. The heating and ventilating system is what is known as a low-pressure fan system. The fresh air, being taken in at the power house, is forced through the tunnel by a 10-foot steel housed fan, driven by a low-pressure engine. The fresh air from the tunnel passes into the heating chamber, containing over 1 mile of 1-inch steel pipe, which heats the air to the desired temperature, which is controlled and regulated by the engineer at the power house. The fan forming a pressure in the tunnel and heating chamber forces the air into galvanized-iron ducts to every room and corridor in the building, the fresh air entering the rooms 7 feet above the floor and dispelling the vitiated air at the floor line of each room into metal-lined ducts and to the large ventilators on the roof.

A battery of three 14-foot boilers generates steam for the heating, also power for the engines and laundry. By actual tests with the anemometer, it was found that with the fan speeding at 200 revolutions per minute, the air in all the rooms was changed every eight minutes, and in the corridors every twenty minutes. A circulating hot water heating apparatus for furnishing hot water to the bath rooms is provided to work the steam plant, and also separately. A set of speaking tubes furnish means of communication from each floor of the building to the power house.

A sewerage system has been installed disposing of the sewage by evaporation, the residuum being used to enrich the soil.

The excavating for the building, power house, tunnels, sewers, etc., besides the quarrying of the stone required in the construction of the power house, was done by the steward of the asylum with the inmates, at a saving of $1,800 to the Territory.

We take more than ordinary pleasure in handing you herewith the annual reports of Dr. W. R. Tipton, medical superintendent, and Mr. George W. Ward, steward.

LAS VEGAS, N. MEX., *June 30, 1898.*

The Honorable Board of Directors of the New Mexico Asylum for the Insane:

GENTLEMEN: Complying with the request of your president, I hereby submit the following report for the year ending June 30, 1898:

My term of office began December 1, 1897, succeeding a most worthy and able predecessor, Dr. F. Marron y Alonzo.

This institution was opened for the reception of patients May 2, 1893, and since that time 122 unfortunates have been regularly received for treatment.

The first building erected was designed and intended to be used as an administration building, and hence was not suitable for the reception and care of patients. Very soon after this institution was opened the number of applications for admission increased very rapidly, which forced the administration to limit the number admitted, on account of the very limited amount of room, and to establish a quota for each county, based upon the number of population. Notwithstanding this wise precaution, the institution has been at all times overcrowded.

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At present there are 57 inmates, of which 33 are males and 24 females, classified as follows:

Dementia	29
Epileptic insanity	3
Delusional insanity	4
Insanity of adolescence	1
Idiocy	4
Acute mania	3
Subacute mania	4
Chronic mania	8
Moral insanity	1
Total	57

During the past year there have been 13 admissions, of which 8 were males and 5 females.

DEATHS.

There have been seven deaths, due to the following causes:

Epilepsy	1
Inanition	2
Maniacal exhaustion	1
General paralysis	1
Pneumonia	1
Total	7

DISCHARGED.

Cured	1
Improved	1
Unimproved	2
Escaped	1
Total	5

Average daily attendance for the year, 58¼.

By the above classification of patients you will notice that the greater number of them are hopelessly incurable, having been so before admission.

Since the opening of this institution the number of chronic and incurable cases admitted has gradually, but steadily, increased, until the vacancies have been reduced to a very few, rendering it impossible, for lack of room, to admit many curable patients. This fact will account for the small number discharged as cured.

I am convinced that of the many cases now confined in the various county jails in the Territory a large number have and will become incurable for lack of early and appropriate treatment.

IMPROVEMENTS.

During the last year a good hospital building and engine house have been built and are now about ready for occupancy, so that the overcrowded and inadequate quarters, especially the insufficient bathing facilities contended with so long, will soon be overcome.

The new hospital is a three-story brick structure substantially built, having wide corridors well lighted and capable of thorough ventilation. Cells have been provided for the violent patients.

There are four new bath and toilet rooms, having two bath tubs and four rain baths. This increase in the bathing facilities is most pleasing, and will prove to be one of the best provisions made in the new addition.

The engine house is a one-story brick building well separated from other buildings, with engine and boilers sufficient to supply the entire plant with heat, hot water, ventilation, and power for laundry, etc.

In addition to the above improvements a large amount of grading has been done, fruit and shade trees have been planted, roses and other ornamental plants have been added, and the vegetable garden has been enlarged.

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The daily and monthly cost per capita has been as follows:

	Per day.	Per month.
Counting food only	$0.13 6/10	$4.13
Counting all expenses	.56 5/10	17.24

The above figures are lower than those of preceding years. For a more detailed account of expenses I will refer you to the report made by the steward.

Very respectfully submitted,

W. R. TIPTON, M. D.,
Medical Superintendent.

LAS VEGAS, N. MEX., *July 25, 1898.*

The Board of Directors of the Insane Asylum of New Mexico.

GENTLEMEN: Pursuant to request of the president of your honorable body, I herewith submit a report covering that part of the expense of operating the insane asylum of New Mexico coming under my immediate charge for the period beginning July 1, 1897, and ending June 30, 1898.

AMOUNTS EXPENDED OR CONSUMED IN THE SEVERAL ACCOUNTS.

Food supplies	$5,253.97
House furnishing	844.41
Kitchen furnishing	18.55
Dining-room furnishing	10.80
Laundry furnishing	10.55
Light and fuel	491.24
Stable	477.46
Miscellaneous	25.00
Home industry	23.51
Water service	300.00
General repair	206.10
Live stock	18.00
Insurance	280.00
Salary of officials and attendants	6,489.99
Total	14,449.58
Less supplies furnished from home industry account included in above.	2,376.54
Total cash outlay	12,073.04
Average daily attendance of patients	58 1/4
Number of meals furnished patients	64,059
Food supplies consumed	5,253.97
Less net amount furnished from home industry account	2,353.03
Balance actual cash cost food supplies	2,900.94
Cost of food per day per patient	.13 6/10
Cost of food per month per patient	4.13
Total cash outlay as above	12,073.04
Average expense per patient for the year	206.38
Average expense per patient per month	17.24
Average expense per patient per day	.56 5/10
Average expense per patient per meal	.18 8/10

FARM AND GARDEN.

The cultivation of a farm and garden being in an experimental stage, I am pleased to report the products as follows:

Vegetables of various kinds	pounds	65,000
Home-raised pork	do	2,087
Milk	gallons	2,248 1/2
Fodder	shocks	32
Oats	pounds	1,000
Corn	do	1,207

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Several hundred dozen of cucumbers, lettuce, rhubarb, roasting ears, and celery, which were not weighed, amounting at market valuation to...	$2,376.54
Entire cost to the board	348.51
Leaving net profit of	2,028.03

The labor of cultivating and storing being performed wholly by patients, except as deduction above.

LABOR OF PATIENTS IN CONNECTION WITH NEW BUILDING.

I have to report labor performed by patients in excavating for the south wing of the asylum building, passageway, and boiler house, Superintendent Rapps's estimate, as follows:

1,666 cubic yards excavation, at 30 cents	$499.80
988 cubic yards excavation, at 37½ cents	370.50
Total	870.30
Deduct for cost of extra labor	91.64
Leaving balance performed by patients	778.66
Stone quarried by patients, hauled to building by asylum team, and used in the construction thereof—200 perch, at 90 cents per perch	180.00
For excavating sewer ditch from boiler house to outlet on boulevard (Superintendent Rapps's estimate), 325 feet, at $1.20 per foot	390.00
Total value patients' labor on new building and grounds	1,348.66
Net product of farm and garden, labor performed by patients	2,028.03
Grand total for patients	3,376.69

Thanking the board for their unanimous support and wise counsel, and soliciting a continuation of the same, the foregoing is respectfully submitted.

GEORGE W. WARD, *Steward.*

It will be noticed from these reports that the average cost per patient for the year is only $206.38, which includes the best of medical attendance as well as food, lodging, clothing, and any other necessities they may require, and reflects great credit upon these officials for their very careful and economical management.

Our officials are great believers in the curative properties of an outdoor life, coupled with some healthful occupation, and the result is the steward keeps the less violent patients at work in the garden and about the buildings as much as their several conditions will permit, thereby benefiting the patients and saving to the asylum in last year's work alone the sum of $3,376.69.

Their work during the past year has consisted largely in excavating for the new building and boiler house, in addition to digging for the sewers, as well as working in the garden, and the figures just given represent what we would have been obliged to pay out if the work had been done by other parties.

Please allow us in conclusion to thank you for the deep interest you have always shown in our institution, which has been manifested in the many visits made us in your official capacity, and to request a continuance of the same during the year upon which we have just entered.

Respectfully,

JOHN W. ZOLLARS,
FRANK S. CROSSON,
MARCUS BRUNSWICK,
BENIGNO ROMERO,
FRED H. PIERCE,
Board of Directors.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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NEW MEXICO PENITENTIARY.

SIR: I have the honor to submit for your information an annual report of the New Mexico Penitentiary for the year commencing July 1, 1897, and ending June 30, 1898.

POPULATION.

Convicts in confinement July 1, 1897		203
Received from Territorial courts		92
Received from United States courts		8
Returned from courts		1
Recaptured		1
Total number of convicts in confinement during the year		305
Discharged upon expiration of sentence with full allowance of good time	55	
Discharged without full allowance of good time	17	
Pardoned by Governor M. A. Otero	9	
Pardoned by Acting Governor Wallace	2	
Pardoned by the President of the United States	1	
Sentence suspended by Governor Otero	1	
Escaped	2	
Taken out by order of the court	1	
Died	2	
		90
Convicts in confinement June 30, 1898		215

Showing an increase of 12 over the number of the preceding year. This increase is small in proportion to the present population of the Territory.

Of the 100 convicts received during the year, the following-named counties furnished, towit:

Bernalillo County	10	Rio Arriba County	5
Chaves County	5	San Juan County	1
Colfax County	5	San Miguel County	18
Donna Ana County	5	Santa Fe County	8
Eddy County	5	Sierra County	1
Grant County	9	Socorro County	16
Lincoln County	7	Union County	5

Of those received during the year, 95 were white males, 4 colored males, 1 Chinese male; total, 100. Ninety-three were committed on first, 6 on second, and 1 on third commitment; total, 100.

The largest number of convicts during the year was 222, and the smallest number 186, making a daily average of 207 prisoners, as against 197 in the year 1897.

DISCIPLINE.

I am gratified to be able to report to you that the discipline in this institution leaves nothing to be desired. The convicts work well and cheerfully at the tasks assigned to them, and what an amount of work they have performed during the past year is too well known to you and requires no mention.

In enforcing discipline in this prison, all officers and employes are taught never to lose sight of the fact that the penitentiary is not only for the punishment of law-breakers, but also an institution which should endeavor to reform the lawbreaker if possible.

SANITARY.

The sanitary condition of the New Mexico Penitentiary, as you yourself know, from frequent personal inspection, is excellent. The percentage of sick during the year has been about 3 per cent. Two deaths occurred in that period, to wit: Convict No. 710, Pedro Baca, died October 15, 1897, of heart failure, and convict No. 1004, Bill Hays, died February 11, 1898, of pneumonia.

MORAL AND RELIGIOUS INSTRUCTIONS.

Divine services have been, I am sorry to say, very much neglected, owing partly to the fact that the last legislature refused to make a small appropriation for a penitentiary chaplain, and partly to the employment of a large number of convicts at the rebuilding of the capitol every Saturday afternoon. These men return to the penitentiary from their work too late to be bathed, shaved, and cleansed, and as this has to be done every Sunday morning, divine service has to be omitted. Thus, for some time past, no religious services have been held at the penitentiary, except those of the Christian Endeavor Society, a small body of convicts, who worship for an hour every Sunday afternoon.

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EMPLOYMENT.

Referring to the subject, I beg to quote from my report to the governor of the Territory for the year 1895: "During the year under consideration (1897-98) the convicts did not only earn their maintenance, but earned in territorial work, over and above it, 8.19 cents each per day. These earnings will be considerably increased at the end of this year. However, the question of finance in prison management should only be looked upon as subsidiary, and I must therefore be pardoned when pointing with pride to the principle which, as above stated, has been crowned with beneficial results.

In conclusion, I beg to state that the cost of maintaining your convicts during the past year (1897-98) has been slightly higher than during the preceding year, owing to higher prices paid for subsistence and clothing. The cost of maintaining the convicts for the year 1897 was 49.7 cents per man per day, and for the year 1898 50.6 cents per man per day, which amount properly apportioned reads as follows:

	Cents.
Salaries for all officers, employees, commissioners, medical attendance, etc..	$33.01
Subsistence	12.85
Clothing	4.20
Total	50.06

As against 49.7 cents during the last year.

I have the honor to be, sir, very respectfully, your obedient servant,

E. H. RERGMANN, *Superintendent.*

His Excellency MIGUEL A. OTERO,
Governor of New Mexico, Sante Fe, N. Mex.

COUNTIES.

There are now eighteen counties in the Territory of New Mexico, located as follows:

NORTHERN TIER.

Colfax; county seat, Springer. Taos; county seat, Taos. Rio Arriba; county seat, Tierra Amarilla. San Juan; county seat, Aztec. Union; county seat, Clayton.

CENTRAL GROUP.

Mora; county seat, Mora. San Miguel; county seat, Las Vegas. Santa Fe; county seat, Santa Fe. Bernalillo; county seat, Albuquerque. Valencia; county seat, Los Lunas. Socorro; county seat, Socorro. Sierra; county seat, Hillsboro. Guadalupe, county seat, Puerto de Luna.

SOUTHERN TIER.

Lincoln; county seat, Lincoln. Donna Ana; county seat, Las Cruces. Grant; county seat, Silver City. Eddy; county seat, Eddy. Chaves; county seat, Roswell.

BERNALILLO COUNTY.

Bernalillo is one of the central counties of New Mexico. It is of very irregular shape, but will average about 70 miles from north to south and 150 miles from east to west, giving it an area of about 10,000 square miles, being a little larger than the State of New Hampshire. It is noticeable for the great variety of its natural resources, which afford ample foundations for the successful prosecution of all the leading industries of the country—agriculture, horticulture, grazing, mining, manufacturing, and lumbering. Of the precious and baser metals, gold, silver, copper, and lead are successfully mined at a number of different points in the county. The coal deposits are extensive and prac-

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tically inexhaustible. In the north central portion of the county veins of bituminous coal of the finest quality, measuring 25 feet in thickness, have been explored, but for the want of facilities of transportation these have never been worked except in a small and ineffective way to obtain a few tons for local consumption. In the same section of the county is found the largest sulphur deposit known on the continent, being literally a mountain of sulphur rock, averaging 2,000 feet high and extending up and down the Jemez River Canyon for a distance of more than 18 miles. The rock yields 50 per cent of its weight in pure sulphur, but the deposit has never been worked except in a very small way, for the purpose of testing it, because of the same difficulty mentioned in connection with the coal measures of that section, i. e., lack of transportation, there being no railway line nearer than 60 miles, and the country being too rugged for successful wagoning.

Another extensive coal field exists in the western part of the county. This is a semibituminous lignite, burning remarkably free and leaving but little more ash than wood. It is mined extensively for railroad, commercial, and domestic purposes. The Santa Fe Pacific Railway obtains the fuel supply for its entire line from these fields, as does also the California Southern. It is shipped for commercial and domestic purposes east to Albuquerque, west to Los Angeles, and throughout southern California and southwest into Arizona as far as Tucson. The annual output of the mines is at present nearly half a million tons, and the companies operating the mines disburse more than a quarter of a million a year in wages.

The railway system of the county consists of the main line of the Atchison, Topeka and Santa Fe, which enters the county on the northeast and runs diagonally across into Valencia County, a distance of 50 miles, and the Santa Fe Pacific, which starts from Albuquerque and runs west to the line of the Territory, going for about one-fourth of the distance in Bernalillo County, and thus giving the county about 100 miles of railway.

The agriculture of the county is greatly diversified by reason of the fact that in all sections the surface is divided into mountainous, tableland and valleys, with a great variety of climatic conditions. The soil is nearly everywhere rich and productive. In most of the mountain districts farming, gardening, and fruit growing are carried on successfully without irrigation, and crop failures, for want of rain or from an excess of moisture, are no more frequent than in any of the agricultural States. On the table-lands or mesas crops can not be grown without irrigation, and farming is done on these lands only in a few localities because of the difficulty of securing a reliable water supply. The soil is strong and rich, being formed sometimes to the depth of hundreds of feet of the diluvial detritus from the granite, lime, and porphyry of the neighboring mountains, and hence practically inexhaustible, though its fertility is generally improved by the application of a little vegetable matter.

The principal part of the agricultural industry of the county, however, is carried on in the valleys of the streams, the chief of these being the Rio Grande, which enters the county from the east, near the north line, and flows thence diagonally across it at its widest part. Here is produced nearly everything that is grown in the north temperate zone, and the yield per acre of all kinds of products is usually much greater than from land in those countries where farming is done without irrigation, because the cultivator can always put on the water when it is needed, and withhold it whenever there is enough, so that his crop is never

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injured either by drought or excessive rainfall, and if he does not get a maximum yield every year, it will be due to a lack of attention on his own part. Wheat, corn, oats, rye, barley, sorghum, and broom corn all grow to perfection in this portion of the county, and the grain yield per acre is much greater than the average in the agricultural States. In Kansas, which is one of the great wheat-growing States, the average yield per acre, as shown by the official report, is but 13 bushels. The average yield per acre in the Rio Grande Valley is 34 bushels, while a 50-bushel field is not by any means unusual. Indian corn also grows to perfection, and the long season enables the farmers to plant the largest southern varieties without any fear of the frost taking it before it is ripe. All kinds of vegetables and fruits grow well in this and other valleys of the county. The farmers and gardeners receive high prices for everything they raise, because there is a demand at home for more than they can produce. At present only a comparatively small part of the land of the valley is under cultivation. The system of irrigation that is in use is the same that was established by the first settlers of the country several centuries ago, and is not adequate to the demands of the present time. It is very wasteful and inefficient, and as soon as modern methods shall have been introduced, the area of land under cultivation can be increased almost, if not quite, 100 per cent without taking any more water from the river than is taken out at the present time. This will serve to furnish homes to a large number of new citizens in one of the most desirable and productive sections of the county, and will indirectly be of great benefit to the entire Territory, because it will serve to keep at home and in circulation among our own people very large sums of money that are now annually sent abroad to pay for articles that might be produced at home.

The cultivation of alfalfa was introduced about twenty years ago, and this plant now constitutes the chief forage crop of the county. The area under cultivation is increasing every year, and though the quantity of hay now made from it is not yet sufficient to meet the home demand, the amount of fodder necessary to be shipped into the county has been reduced in the course of fifteen years about 90 per cent, and it will not be many years, at the present rate of progress, before the county will be able to supply all its own demands in this regard and have some to sell.

Among the well-known mining districts in Bernalillo County may be named Cochiti, Hell Canyon, Cayote Canyon, Tijeras, Las Placitas, and Copper City, in all of which there are mines of well-established value. The Copper City and Tijeras districts have turned out vast quantities of the richest copper ores ever mined in the Territory; Cayote Canyon and Las Placitas have large veins of low-grade ores carrying gold and silver, but as yet the properties have not fallen into the hands of men with sufficient capital to properly develop them. Hell Canyon is a producing camp, and has several valuable mines. There is a small placer field at the mouth of the canyon that is unusually rich, but it is unfortunately tied up by legal complications, and no work is being done upon it. A stamp mill, the property of the company that owns one of the mines, is running steadily upon the company's ores, and the results are very satisfactory. But the most important district in the county, if not, indeed, in the Territory, is Cochiti, situated in the Valles Mountains, about 40 miles from Albuquerque, in a northeast direction. The Cochiti country is one of the most remarkable mineral fields on the continent, and mining experts who have been over the ground are unanimous in the opinion that the deposits of the precious metals in

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this vicinity are greater in volume and value than any that have ever yet been discovered in any other section of New Mexico. The district lies directly in the line of the rich gold belt that stretches through Cripple Creek, in Colorado, the Red River district, in the north of this Territory, and White Oaks, in the south central portion. The country bears upon its surface all the outward evidence of a mineral field, and this fact, together with the one just above mentioned, convinced experienced prospectors many years ago that the precious metals were here, and they were consequently sought for long and diligently, but it was only of comparative recent date that the first discoveries were made that laid the foundation for the present large and flourishing camps.

Cochiti has been known to the public as a mineral district only since 1893, as it was in that year that the discoveries were made that caused public attention to be turned in that direction. There are no "placer diggings" in the district, and the veins, though of immense size, carry ore which is of comparatively low grade. Very little of it is free milling, and nearly all of it requires to be smelted or to be treated by processes especially adapted to itself. These conditions, while not militating in any degree against the permanent character of the producing capabilities of the great leads there discovered, made it apparent at once, to all experienced men, that capital in considerable amounts was required to transform these marvelous veins into paying mines; and to induce the owners of money to invest it in a new and unknown mining district is a very difficult task. But this has at last been accomplished in the case of Cochiti, and some of the largest and finest mining machinery in the Southwest is now in active operation in that camp. Broad heavy veins of ores carrying moderate values, like those of Cochiti, not only make the most reliable mines, and in the end far the most profitable to the owners, but mines which are also of infinitely greater value to the country than the "big bonanzas," which yield fabulous wealth from a few "pockets," and then "pinch out." Veins like those at Cochiti can be worked upon just as reliable a basis as coal mines, and without any greater per cent of risk and uncertainty than attaches to any ordinary line of business. The element of chance is reduced to the minimum, and the company can calculate with almost mathematical accuracy how much profit can be realized from the outlay of a given amount of money. The veins run with remarkable regularity in volume and value. The manager knows all the time just how much ore a given number of men can turn out, and how much it costs to place his ore on the dump. He knows also, with practical certainty, just how much value each ton will yield. There is nothing in it that depends on "luck," or the chance of striking a "pocket," but the working of these broad veins is a straight business proposition; and now that capital has come to realize the actual value and permanent character of the vast mineral deposits of Cochiti, it will be but a comparatively short time till that district will take rank as one of the most prosperous and populous camps of New Mexico, and one that will contribute greatly to the prosperity of all the surrounding country.

There are four prominent towns in Bernalillo County, namely: Albuquerque, Gallup, Bland, and Bernalillo.

Albuquerque is the largest town in New Mexico and has a population of about 12,000. It is incorporated under the simple and efficient Territorial law for the government of cities; its municipal affairs are managed in a satisfactory manner, without useless or expensive machinery, and it thus has good government with low taxes. It has 25 miles of well-graded streets and about 50 miles of sidewalks; it has a thorough

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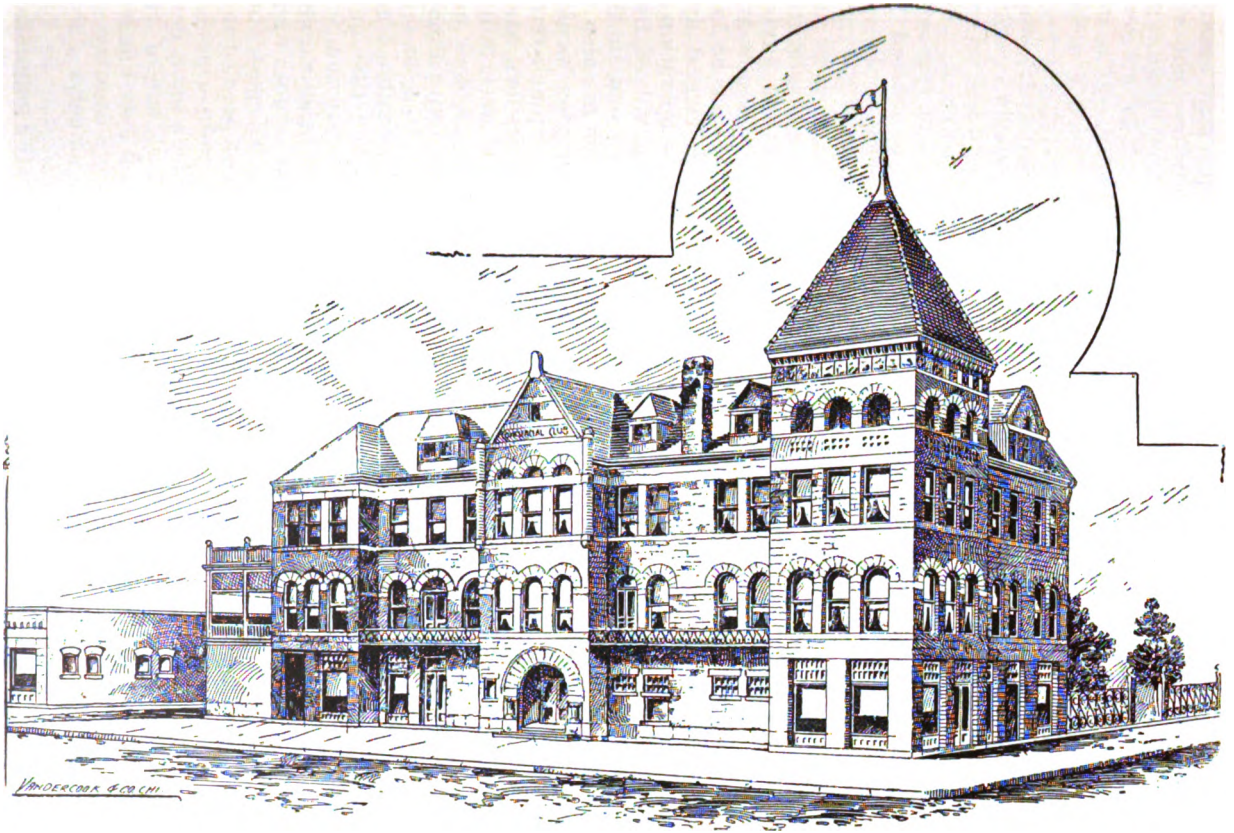

COMMERCIAL CLUB, ALBUQUERQUE.

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system of underground sewers, and the sewerage is discharged into the river a mile below town; it is lighted by gas and electricity; has water works and a good fire department; street cars and good hotels; two daily newspapers, four weekly papers; a free public library, and a modern public-school system. Numerous resorts in the mountains adjacent to the town are a source of never-ending interest and enjoyment to visitors and residents during the summer, and may be reached by drives of from one to three hours over the finest of natural roads, presenting scenery that is not excelled in any part of the Southwest. The important manufacturing plants of the town include three flouring mills, an ice factory, two foundries, railroad machine shops, and a brewery, employing together about 550 men; and in addition to the important establishments named, there are a score of smaller works, employing from two to six men each. There are openings for canning factories, fruit-drying establishments, and many other smaller manufacturing industries, with a ready market for their products.

The public institutions of Albuquerque include the Territorial University of New Mexico, United States Indian School, Methodist College, Southwestern Academy of the New West Education Commission, St. Vincent's (Catholic) Academy, St. Mary's (Catholic) Parochial School, four fine public-school buildings, eleven churches, a free public library, two daily newspapers, and the Commercial Club, a literary, social, and business organization, conducted in the interest of the public, and which owns and occupies one of the finest and most costly buildings in New Mexico. Albuquerque is the trade center of a vast area of rich and productive country—an area greater than that of the six New England States and New York combined—and though the agricultural products of this area are not as great in volume as those of a like district in the agricultural sections of the country, its products in gold, silver, copper, lead, coal, lumber, cattle, and sheep are enormous, and as they chiefly find their way to market through this place, and those engaged in these lines do their banking business here, it will be seen that here is an ample foundation upon which to build a city much larger than any that now exists between the Missouri River and Los Angeles.

The sheep and wool products of New Mexico alone have brought into the Territory during the year of 1898 a sum of money sufficient to give about $24 a head to every man, woman, and child of the total population, and as at least one-third of all these products are handled in Albuquerque or through Albuquerque dealers, it will readily be seen that this of itself furnishes a good commercial foundation for a place much larger than the present town.

But sheep and wool constitute only one item of the products of the country. The mining business is probably bringing in at present as much money as the sheep business, and it is also developing very rapidly, and will become in a few years, if it is not already, the leading industry of the Territory. And this line of business, like the other, has its center at Albuquerque, and mine operators, even in some of the most remote parts, pay their men and carry out all their transactions with checks on Albuquerque banks. And the proportion of the total business in both of these lines which is transacted here is very rapidly increasing every year.

Next to Albuquerque, in point of population, is Gallup, the most important coal-mining point in the Southwest. Gallup and Albuquerque are farther apart than Boston and New York, yet they are both in the same county and regard each other as "next door neighbors." Gallup is

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a place of about 2,000 people, and is the largest town on the line of the Santa Fe Pacific road west of Albuquerque. It is well equipped with schools, churches, and places of public entertainment, and has a good weekly newspaper. It has a number of fine business blocks, occupied by wide-awake, enterprising merchants, and its coal mines furnish steady employment to about 700 men.

The extent to which the coal-mining industry, of which Gallup is the center, may be developed is practically unlimited. What has been done thus far is only a beginning—it is merely as "a drop in the bucket" compared with what can be, and doubtless what will be, accomplished in the not very far distant future, and yet the very little that has been done up to this time furnishes the great railway line from Albuquerque to Los Angeles with its most important item of local traffic.

The vast coal field of which Gallup is the shipping point has only been partially and superficially explored. How much greater and more vast may be the deposits to be found in that district by future explorers we may not at present even hazard a guess, but a very good idea of the value and permanency of the resources upon which the town of Gallup depends for its prosperity may be gathered from the fact that even the little that is now known of the extent and volume of the coal deposits of that district is sufficient to show that were the present output doubled, or even quadrupled, centuries must elapse before there will be any visible diminution of the supply.

The town of Bland, in the Cochiti mining district, has been growing more rapidly during the last year than any other town in the county, and now ranks next to Gallup. It has at present about 1,200 people, all of whom depend directly or indirectly upon the mines of the district. It has a good public school, an excellent weekly newspaper, a live and wide-awake population, and is in all respects a typical American mining town, brim full of enterprise and pluck.

Bernalillo, which was at one time the big town of the county, has been overtaken by three of its younger rivals, and now ranks fourth in point of size. It is delightfully situated on the Rio Grande, at the north end of the Sandia range, and is a beautiful, home-like place. It does a large business in wool, grapes, fruits, and wine, and its people represent a large portion of the wealth of the county.

In addition to the towns named, there are a number of large villages in Bernalillo county, prominent among which may be mentioned Los Corrales, Pajarita, Atrisco, Casa Salazar, Las Placitas, Chilili, and Nacimiento. Their people depend almost entirely upon agriculture and woolgrowing, and are generally prosperous and contented.

RESOURCES OF CHAVES COUNTY.

Chaves County is the second largest county in New Mexico in its number of acres. In its area of arable and irrigable lands it is by a large per cent the first county in the Territory. It contains 6,554,000 acres. The average altitude of the county is about 3,800 feet. It is about six times the size of the State of Delaware, and it is capable of producing far more than six times as much human food as that notable State of gardens and orchards.

The eastern part of the county, lying beyond the Pecos River, is a very fine natural grass country and sustains large flocks of cattle, but it is beyond the limits of irrigation, except in small areas from springs and from wells by steam or wind power. The western part of the county extends from the Pecos across the broad plains which reach the foot-

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hills, which average about 20 miles distant. The high rolling lands on the west line of the foothill region are admirable grass lands, which embrace many small valleys where water can be stored for irrigation purposes and small farms can be established.

The very rich country lying between the foothills and the Pecos is one of the most valuable tracts of land in America. Its soil is a brown chocolate loam of great depth, and is inexhaustibly rich in all the mineral elements that render farms permanently fertile. Nearly all of this region is situated very favorably for irrigation, both in its topographical features and in the possibility of a sufficient water supply. All this region slopes gently to the east, and with its broad easy swells and almost level areas it lies most invitingly for the irrigator. This district embraces about 250,000 acres.

WATER SUPPLY.

The available water supply is in three forms:

First. The very large springs in the neighborhood of Roswell, which are from 5 to 8 miles west of the Pecos. Their united flow is from 15,000,000 to 20,000,000 cubic feet of water every twenty-four hours. This water is much used for irrigating the contiguous farms. With a more economical use of water these springs will be able to supply as much as 100,000 acres with an abundance of water for all kinds of agricultural crops.

Second. The artesian wells which can be had in this district, which lies immediately below the level of the big springs. These wells strike a perpetual flow of water at a depth of from 150 to 400 feet. There are now about 100 of them in operation, and they add substantially to the water supply of this immediate district. The yield of water is from 20 to 60 cubic feet of water per minute, or from 25,000 to 75,000 cubic feet of water per day. Each of these wells is capable, when the water is fully utilized by storage and careful distribution, of irrigating from 100 to 3 0 acres of farming land. The possible supply of artesian water within the district described is far in excess of the demand of the land within its immediate scope, and can be used by properly located canals to water a large area lower down the valley, in the south part of this county and in Eddy County. There are approximately 50,000 acres of land in this county lying "under" the artesian system, when good engineering has fully utilized this great natural supply. At present this wonderful resource has been but crudely and wastefully developed. As we have seen, the quantity of water available is sufficient when properly handled to cover an equally large tract of fine land in the next county below us.

Third. The storage reservoirs, which are easily built, and have an abundant water supply to fill them. About 200,000 acres of this fine rich tillable land lies above all possible natural spring or artesian-well irrigation, and must depend upon waters to be stored in reservoirs yet to be constructed. This matter has never been seriously taken up by the citizens and landowners, but plans are now made for storing the vast volume of water that annually comes down from the White and El Capitan ranges of mountains and their foothills in Lincoln County, and goes in great floods to the Pecos and the Rio Grande, giving no service to man, but often doing much harm by inundating the lower valleys. There are several excellent reservoir sites that have been surveyed, mapped, and entered upon, and it is expected that construction will be commenced within the current year. When these great reservoirs are

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built—and they will be larger than any now made in the United States—an abundance of water will be stored to put all of the great tract above described into a high state of cultivation. This reservoir proposition is entirely practicable, both in the easy topography of the sites and in the abundance of storm waters which go to waste from a drainage district covering more than 2,000,000 acres of hill and mountain country. When it is carried out and all the lands in the county which are subject to irrigation are brought under its transforming influence then this irrigation district of Chaves County will be capable of producing a greater tonnage of important agricultural and horticultural crops than any equal acre of the United States.

The large claim made in the above paragraph may seem extravagant to people not familiar with the yields of crops from rich land under well-managed irrigation. All the great agricultural States are subject to immense crop losses both from excessive rainfall and from prolonged droughts. No farmer in the country depending wholly on rainfall is ever sure of a crop that is proportioned to the skill and labor given to it. The energetic, up-to-date farmer may get a maximum crop; he may get a half crop; he may get a failure. An equally industrious and brainy farmer in Chaves County who has good land, a moderate rainfall, exemption from destructive floods, and a complete command of an irrigation supply of water, will get maximum crops every year. Hence the boldness with which this claim is made.

WHAT OUR STAPLE CROPS WILL BE.

Live stock.—We mean live stock of all kinds—cattle, sheep, hogs, mules, and horses—bred and grown on farms, inside of pasture fences, with abundance of food every day in the year and a perennial supply of water. The great yields of alfalfa and other grasses which are adapted to make rapid animal growth in the "rich Roswell Country" have been for years a surprise to all visitors from the old States. The experience of our most intelligent farmers shows that as much as 2 head of cows, steers, horses, or mules can be kept in a thrifty, growing condition on each acre of alfalfa land for the entire year. The best farmers of Kansas, Illinois, Ohio, or Kentucky say that in these States it takes 2 acres of land to carry one animal through the entire year. This statement is intended to be conservative, and it shows a difference of four to one in favor of the Roswell irrigation country. With sheep and hogs, from 10 to 20 head to the acre can be carried through the year. The statements are intended to cover the growing of these animals up to maturity, but not to embrace their fattening or "finishing off." For the fattening period this region will not possess the same proportional advantage. We can fatten all the beef, pork, and mutton here all right on corn, Kaffir corn, milo maize, etc., grown right here and not in Kansas, but we can not grow four times as much grain to the acre here as they can in the rain-belt States, yet we can grow larger average crops of these grains in ten-year periods than any State can show without irrigation advantages.

The future of this region as a producer of meats at a very low cost, and hence at a large profit, seems assured. The attention of farmers has been turned to this question for but a few years. Roswell is headquarters for an extended cattle and sheep interest conducted upon the open-range plan. Stock farming upon the eastern plan is a very different industry, and has not until recently attracted the consideration of our enterprising cattle companies. But much thought is now being

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given to the matter, and there is promise of a great development along this line.

The area of land that can be put into meat production, under one or all of the irrigation systems, is large enough to support an industry of magnificent proportions. Beyond a doubt the majority of this land will be ultimately used to increase the meat supply of the world. There are many reasons for this. This is one of the healthiest regions for live stock of all kinds on the globe. We have none of the diseases that are so fatal to cattle, hogs, or sheep in humid climates. Our altitude above sea level, our thorough surface drainage, our semiarid climate, and our proximity to the Rocky Mountains, combine to give us a climate of exceptional salubrity for both men and animals. The thorough farm manager will be able to raise 99 per cent of the stock born in his fields to full maturity. The length of season in which stock live in our pastures without any need of prepared feed, taken in connection with the immense yield of these pastures, will always make the actual cost of meat products a very low one. The extremely small risk, the very light labor in providing cured foods, together with the certainty of an unlimited demand for our meats at fair prices, with comparatively slight fluctuations, will altogether make this branch of farming attractive to the large majority of men.

Suppose as much as 150,000 acres of the area described as capable of irrigation should be put into meat-producing industries, what would be a conservative estimate of the yield of this area in these products? Our swine growers will certainly claim ability to grow 10 pigs to the acre yearly that will weigh 200 pounds each, live weight. The most pessimistic farmer would not reckon this crop as low as 1,000 pounds of live hog to the acre. But at that very safe figure, an aggregate of hog farms equal to two and one-half townships of this district would give an annual output of 50,000,000 pounds of hogs. In a region where hogs are never decimated by disease, and where they breed and grow with so little cost to the farmer, it is by no means a chimerical expectation that such an industry may be built up. The sheep breeders will claim an equal facility and equal profit in producing mutton and wool.

But the great meat of the world is beef. The beef supply is never large enough to meet the world's demand. The area for beef production can not be greatly extended in the United States, at least not enough to equal the constantly increasing demand. The foreign demand for our beef and beef products is growing year by year. The population and wealth of the civilized nations—the nations that eat beef—is growing somewhat rapidly. The agricultural situation of the beef-producing countries of the world shows that the volume of production is not likely to keep pace with the magnitude of the demand; hence the prices of beef will never for any long period diminish, but will beyond question increase. This insures a steady and profitable market for this staple meat of the world for all future time.

We are in this county very fortunately situated for sending our crops—especially meat crops—to the large markets of the world. We shall soon be in direct communication with Kansas City and Chicago and all the great interior cities. We are but about 800 miles from Galveston. Our beef and pork and mutton will ere many years pass be slaughtered here, shipped under refrigeration to Galveston, and thence in refrigerator ships to London and the continental cities of Europe. This will surely follow the establishment of large meat-producing ranches, according to the inevitable working of commercial laws. We are nearer to an exporting point than Kansas, Iowa, or Illinois. We can produce and

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fatten the highest quality of beef and pork and mutton at a cost of about one-third the amount it will cost the farmer in these States. We can place our products in the best markets of the world at an equal expense. If this be so, is there not a bright future for the grower of meats on the irrigated lands of Chaves County? Is it a wild calculation to suppose that the chances to produce these crops under such unusual advantages will be fully improved and at least 150,000 acres of these rich lands be put to this use? If this is to be so, then an annual yield of 150,000,000 pounds of meat products for this county is a by no means extravagant expectation.

Orchards and vineyards.—The horticultural capabilities of Chaves County are not well proven, but only indicated by the very limited experiments in that line, excepting only for apples. There is no vineyard of importance in the county. The few dozens of vines planted in gardens are usually in soils least adapted to their success. Grapes require high, dry, open lands, with thorough drainage. Peaches require a similar soil and a situation above surrounding land, where there is good cold-air drainage in the spring. But the few peach trees planted here have been on land too low and too rich, hence occasional failures of crops must not be taken to discredit this district for those cultures. There are numerous gravelly ridges and slopes lying up near the foothills, amounting to many thousands of acres, that are not well adapted to farm crops, but which it is believed are particularly adapted to produce reasonably sure crops of grapes, peaches, and cherries. The color and quality of these fruits on these high lands will be superior to what can be grown on the richer plains, and the crops will be far surer. There is from 25,000 to 50,000 acres of this class of land in this county that should some time be famous for its vineyards and peach orchards. We can grow both the European or California class of grapes, and all the American varieties. We can grow a class of peaches here which are quite sure croppers, but which in the States rot so badly that they are not profitable. We need never have peach rot or grape rot in this climate. We shall be free from destructive diseases which attack orchards and vineyards at the East. For these crops we have the advantage of California, with the great additional one of proximity to the important markets of the center of the continent and of the entire South, hence it is believed that peach and grape culture will in time be established here on a large scale.

For the production of apples and all of the pears and plums that bloom late in the season, it is believed that Chaves County has advantages that outweigh those of any other section of the United States. Enough has been done in apples to demonstrate our great superiority. The writer has seen and studied apples from every apple-producing region of the globe, but has never seen as perfect, handsome, and excellent apples grown in any country as we have grown near Roswell during the last four years. The high color, symmetrical form, and polished, waxen purity of the skin of our apples, as they grow on the trees and before they are bruised and spoiled by the common apple handler, combined as it is with the perfection of flavor in the given varieties, is something we do not find elsewhere. When we add to this the fact that the trees are exceptionally free from all diseases of leaf and limb and from all accidents except the occasional one of hail and the pretty general one of damage by the ignorant tree pruner, and that crops are more sure than perhaps in any other apple-growing section of America, we see reason to believe that apple growing will become among the most important of our industries. In fact, it should rank next to the growing of meats.

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An apple tree in full bearing will yield an average of 10 bushels to the tree. There should be 120 trees planted on an acre. These can grow until the orchard has yielded many such crops of 10 bushels to the tree. At some time in the future a portion of these trees may require removal, but we need not now consider that contingency. We may expect a first-class apple orchard to yield 1,000 bushels of apples to the acre, taking an average of the years. What should we see if the 1,500 acres of apple orchard now growing in the county should by and by grow to be 50,000 acres? Why, possible crops of 50,000,000 bushels of apples if every man did his best! It may seem that this would be an impracticable and unmarketable crop, but statistics of production and consumption do not point that way. It is very rare that there is a general apple crop in the United States. About every other year prices run very high. America is its own best apple market, but it has to produce all of the highest grade apples used in the whole world. For this great world's fruit, as for cotton and corn, America must supply the civilized nations. The old apple States are suffering from a multitude of diseases which we are free from. The "Star of Empire" in apple production is moving rapidly westward. We are nearer to a good exporting point than any Western State. Then why should we not plan to reap our manifold, nature-given advantages, and make Chaves County the crowning apple region of the world?

RAILROAD FACILITIES.

The Pecos Valley Railway runs from Roswell south to Pecos, where it connects us with El Paso and Mexico and California on the west, and with Fort Worth, Dallas, Galveston, New Orleans, and St. Louis to the eastward. The extension of this railway to Amarillo, 200 miles, which is now actively building at both ends and will be completed by January, 1899, will connect us directly with Denver, Kansas City, and Chicago. The proposed railroad to the coal fields in Lincoln County will be but 75 miles long and will soon be built. This will give us cheap and excellent coal and easy access to the mineral region and the cool summer climate of the White Mountains. A road running from Roswell to Albuquerque and another from Roswell to Fort Worth direct would, with their connections, constitute the shortest and most desirable line between San Francisco and the cities of the Gulf. This line is being seriously considered, and all natural and commercial reasons favor its construction in the not remote future. The orthodox Roswell man believes his town will become an important railway center within the next decade. The shops, roundhouses, and official headquarters of the Pecos Valley Railway and of the Pecos Valley and Northeastern are to be established in Roswell during the current year. This is fixed by definite contract with those companies.

BUSINESS DATA.

The lands in Chaves County entered and held by private owners slightly exceed 130,000 acres. Of this amount 4,850 acres are seeded to alfalfa, and are now yielding abundant pasturage and hay crops. This is but the beginning of a vast development of this interest which will rapidly follow, for it has become a recognized agricultural fact that alfalfa far surpasses all forage plants in its capacity to support animal growth. The soil of Chaves County is preeminently adapted to this plant. The great extension of the live-stock interests of the southwest that is coming in the immediate future will mainly be based on alfalfa.

The acreage in orchards is now about 1,500, and is mainly in win[illegible]

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apples. These orchards are nearly all young and are just coming into bearing.

There are something over 120,000 cattle owned in the county and 150,000 sheep. Great attention is now being given to improving the breeds of both cattle and sheep. Several large farms are now devoted mainly to breeding the best beef breeds of cattle. This enterprise has had unqualified success from the start and will grow into large proportions, as, for the reasons given above, no stock-breeding section of the States has so many advantages for this industry.

Roswell is to be the center of the sheep industry and of the wool-handling interests for the southeastern part of the Territory. Large amounts of capital have been invested in sheep in this county within the past few months. The largest flock master in the region west of the Missouri River has purchased extensive interests here. Wool-scouring establishments are likely to be built at an early date. As we are nearer to Kansas City than any other important shipping point in New Mexico, all the facts of the present situation point to Roswell becoming the metropolis of the sheep industries of the Southwest.

The shipments of wool from Roswell for the year 1898 will be about 1,000,000 pounds. The great herds of range cattle that have in former years been driven across the plains to connect with the Kansas railways will henceforth be shipped direct from Roswell, and can reach Kansas City in twenty-four hours without unloading. This will be the shipping point for the cattle from Lincoln County and a large portion of Eddy County. But the volume of this traffic that can come from the open range from these three counties will be greatly exceeded by the yield of the farms that will be created in the irrigable district of Chaves County alone when the different systems of water supply herein outlined have been fully developed.

Roswell is a trade center of considerable present importance, with an assured growth in the future. Our mercantile sales exceeded $400,000 in 1897, and will pass the half-million mark in the current year.

EDUCATIONAL ADVANTAGES.

Roswell has been noted for its interest in public schools. In addition to its excellent graded system, with two brick school buildings erected at a cost of $7,500, it now has a seminary of the higher class established here. This is the New Mexico Military Institute, which will commence its first session in September of this year in its new and imposing brick building, which has been erected on the bluff north of town. This institution, with its equipment for high-grade teaching, will, with other schools being planned, make Roswell an important educational center. The climate of this region distinctly favors this. Our summers are cool and our winters are temperate and delightful.

To recapitulate the advantages and resources of the county, it may be stated briefly that the foundation of the present and future prosperity of the county is agriculture. Successful agriculture is based on good land and a cheap and reliable water supply. Chaves County has a greater area of rich land that can be irrigated than any county of the Territory or in the entire Southwest. It can be irrigated because there is a sufficient water supply within easy reach, at a low cost, to fertilize every acre of the arable area above described. Hence we have a larger natural capacity for producing staple crops than any competing section.

The people of Chaves County feel that they are in the morning of a glorious day. They are in a strong and hopeful mood, and are ready to keep step with the procession in which our "New America" travels forward to its magnificent destiny.

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COLFAX COUNTY.

Colfax County is in the northeastern portion of New Mexico, next to the southern line of Colorado; is 72 miles long from east to west and 54 miles wide from north to south. Its area is 3,888 square miles, or 2,488,320 acres. Of this area 2,300 square miles are included in the famous Maxwell land grant, the title to which has been long since settled. Much of this land has been sold and is now owned by ranchmen and farmers. The remaining land in the county mostly remains a part of the public domain, only a comparatively small portion having been taken up by settlers.

The central and southeastern part of the county is rolling prairie and valley land, well watered by permanent streams, springs, and lakes, and is specially suitable for stock raising and farming.

The western and northern portions are mountainous, being low-lying, well-sheltered foothills and valleys, backed by a high mountain range. In this mountain range, which is a spur of the Rocky Mountains, a number of permanent streams have their source, all flowing to the southeast, furnishing water for the fertile valleys and prairies.

The altitude varies from 5,600 feet in the southeastern part of the county to about 7,000 in the foothill valleys and up to 13,000 feet on the mountains. The general slope of the country being to the southeast, the cold storms from the north are broken against the mountains, so that cyclones and blizzards, such as sweep over the open plains to the north and east, are unknown here. The average mean temperature for the year at an altitude of 6,000 feet is 51° F., being 34° for the three coldest months—December, January, and February, and 70° for the three warmest months—June, July, and August. The atmosphere is dry and extremes of heat or cold are not at any time disagreeable. The average annual rainfall is 15 to 18 inches at same altitude, 6,000 feet and over 30 inches in the high mountains. Much snow falls in the mountains, which melts gradually during the spring and early summer, furnishing a good supply of water for irrigation.

The days and nights are pleasantly cool in summer and comfortably warm in winter, and it is withal the most delightful all-the-year-round climate to be found anywhere in the world.

The following, from the Guide to the Maxwell Grant, aptly describes our climate:

The climate of the southeastern slopes of the Rocky Mountains, where the Maxwell land grant is situated, is beyond description beautiful. The air has, even in the dog days, a bright, effervescent crispness that defies the greatest efforts of the hot sun to make it sultry. The sun seems to shine through, not into, the air, and one is often surprised, when looking at the thermometer on some pleasant day, to find the mercury way up in the nineties. This peculiarity of never feeling uncomfortably warm, even with the mercury at that height, is accounted for by the extreme dryness of the atmosphere, the mean humidity being only 38 per cent. This causes a rapid evaporation of perspiration from the skin and a corresponding coolness of the surface. One never feels depressed as one does farther east and in Europe and at lower altitudes and in all other hot countries. After the hottest summer day a couple of blankets at night will always be required. As in summer one does not feel the dry heat, so in winter one does not feel the dry cold. Out of the wind and in the sun it is always warm; so much so, that the cold is not thought a drawback by the army of consumptives that flock to New Mexico as a sanitarium. It may be stated as absolute truth that we have no severe droughts, no fogs, no hot winds, no cyclones, tornadoes, or hurricanes, no northers, no winter rains, and it was no exaggeration when the Hon. L. Bradford Prince, then governor of New Mexico, in an address delivered in September, 1891, speaking of Colfax County, in which the Maxwell grant is located, said:

"When one views the verdant plains of eastern Colfax, covered with herds of cattle, changing to the west into the agricultural lands along the Vermejo, the Ponil,

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and the Cimarron, dotted with the coal mines of Blossburg and the pine forests of Catskill, and rising into the golden mountains and gold-bearing streams of Elizabethtown, one is apt to say, 'This, truly, is the promised land.'"

The people who reside here, as well as all domestic animals, are remarkably free from disease. There is something in the dry, pure air, possibly ozone, that is destructive to disease germs, and people spend much of their time out of doors the year round, which is always conducive to good health and a cheerful, happy existence.

The so-called rainy season, of about six weeks to two months, usually occurs in July and August, during which time showers fall almost daily, generally in the afternoon, the mornings being clear and bright. Then the whole country, from the green prairies and valleys up through the evergreen foothills covered with piñon, cedar, pine, and spruce timber, to the high mountains, upon whose lofty summits banks of snow can be seen, presents a landscape as lovely as the eye could wish to see.

In these mountains the scenery is grand beyond description. There are many clear, cold, rippling streams in which there are speckled trout, and on either side great forests of pine and spruce timber where the hunter can find deer, bear, wild turkeys, grouse, and other game. Many of the people spend several weeks each year in delightful camping parties in these mountains.

The wealth of Colfax County in mineral, agriculture, and timber lands, though still very much undeveloped, is very great, one mine alone having produced over $1,000,000. The elevation of the table-lands ranges from 5,000 to 8,000 feet and the prairie land from 4,000 to 5,000 feet.

The principal incorporated city is Raton, having a population of over 3,500 people, composed chiefly of artisans and mechanics; it is also the county seat. The Atchison, Topeka and Santa Fe Railway Company has here its largest machine shops west of Topeka. The other important towns are Springer, Elizabethtown, Gardiner, Blossburg, Maxwell City, Catskill, and Cimarron; all doing a good business and thriving rapidly. The coke ovens at Gardiner, 2 miles west of Raton, are among the finest in the Rocky Mountain mining region. Coal sells from $1.50 to $2 per ton.

Catskill lies in the timber district, and seven sawmills are in operation the year round, giving employment to a large number of employes.

Elizabethtown and Cimarron are in the mining district, where a large number of paying mines are constantly in operation.

Near Maxwell City and Springer large irrigating ditches and reservoirs have been constructed and 50,000 acres of land placed under ditch. Farming has within the last few years progressed rapidly. Near Springer are several artesian wells, from which large tracts of land are irrigated, and the medicinal qualities of the water are unsurpassed, and large quantities of it are bottled and shipped to various parts of the country.

IRRIGATION AND WATER SUPPLY.

The rainfall of 15 to 18 inches annually, although a large portion of it falls during the summer season, is not sufficient to insure the growth and maturing of crops, and most of the farming is done under a system of irrigation.

While this system has some disadvantages, the farmer soon learns that the certainty of raising a crop every year, the convenience of being able to moisten and plow the ground when he wishes to without waiting for rain to fall or for floods to dry up, the certainty of

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having pleasant weather for the harvest, and the fact that the waters used for irrigating constantly supply fertilizing matter to the soil, more than make up for the extra cost and trouble of irrigating.

During the spring and early summer the melting snows in the mountains fill the streams and usually furnish water enough, if it could be utilized, to irrigate all the land in the county. But during the month of June, and often part of May, the water in the streams is low, and in order to insure ample water supply at all times for large tracts of land it is necessary to save the water when it is plentiful in storage reservoirs. Fortunately there are many natural basins in the county where this can be done at little cost.

The Maxwell Land Grant Company owns two large irrigating systems with storage reservoirs. One takes the water from the Vermejo through 20 miles of main canals and distributes it from fourteen storage reservoirs through 40 miles of laterals.

The other, near Springer, gets its water from the Cimarron River, and consists of 26 miles of main canals, 20 miles of laterals, and a number of storage reservoirs, the largest covering 700 acres an average depth of 9 feet.

There are many smaller irrigating systems and ditches belonging to private individuals, and altogether about 60,000 acres are under ditch in the county.

Surveys have been made for a large storage reservoir in the Moreno Valley, at the upper end of the Cimarron Canyon. At this point a dam 100 feet long at the base, 230 feet long on top, and 100 feet high will make a reservoir covering 3,000 acres of land an average depth of over 30 feet, which will hold 30,000,000,000 gallons of water at one filling. The material for building the dam is immediately at hand in the rocky cliffs near by. The drainage area above this point, with numerous never-failing mountain streams, furnishes water enough each year to fill such a reservoir several times. This reservoir would supply water sufficient to irrigate 100,000 acres, and the total expense of the reservoir and canals necessary to distribute the water would not exceed $2 per acre.

This is only one of the many enterprises awaiting development in this county.

There are thirty-nine school districts in the county, wherein school is taught from three to ten months in each year, and education is carried to every home, so that not a child in the county is in any way barred from the opportunities of a liberal education.

The county is bordered on the west by the ridge of the Sangre de Cristo range of mountains, and partially on the north by the Raton Mountains, which form almost a right angle, whose sides are 50 miles in length. The prairies are well watered by the Red, Vermejo, and Cimarron rivers, including the Rayado and many tributaries and smaller streams.

The cost of irrigable land varies from $15 to $30 per acre; this includes free use of water under perpetual lease.

The climate is mild and equable as all through New Mexico and offers a permanent cure to those afflicted with pulmonary complaints.

The Maxwell Land Grant Company, a corporation owning a very large portion of the land in the county, has constructed a perfect telephone system, connecting all important towns in the county.

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RAILROADS.

There are two railroads in the county, the Atchison, Topeka and Santa Fe, which traverses the county from north to south, and a branch of the Union Pacific, which has recently been built into the timber district at the head of Red River.

AGRICULTURE.

In the higher mountain valleys and on the high mesas or table-lands in the northeastern part of the county, crops, particularly of wheat, oats, barley, hay, and potatoes, grow without irrigation. Johnson mesa, east of Raton, which until a few years ago was used only as grazing land for sheep and cattle, is now settled up by several hundred prosperous farmers. In the lower valleys and on the prairies crops of all kinds grow luxuriantly under irrigation. The principal crops are wheat, oats, barley, alfalfa (producing three good cuttings each year), sorghum, beans, peas, and all kinds of field and garden vegetables that can be grown anywhere in the temperate zone. The summer nights are too cool for corn except the early northern varieties.

Fruits, particularly apples, pears, plums, cherries, apricots, crab-apples, quinces, nectarines, berries, and the hardier kinds of peaches and grapes, are produced in abundance.

The fruit and trees are free from blight, and the fruits are remarkably crisp, juicy, and of pleasant flavor.

The crop is very certain, and no general failure of the fruit crop has occurred in the county for many years.

MINES.

Coal.—Colfax County contains approximately 1,000 square miles of coal land. The coal is a rich bituminous coal, being of the best for steam purposes and locomotives, and is a fine coking coal. It lies in horizontal beds or strata in the foothills, from 4 to 13 feet in thickness, and is easily mined by driving entries into the hills along the veins. The mines are dry, and neither hoisting nor pumping is necessary. The principal operated mines belong to the Raton Coal and Coke Company, at Blossburg, and they supply most of the coal to the railroads in New Mexico and northern Mexico. These mines have a present capacity of 1,500 tons per day. The company has a new, complete, modern electric plant for cutting and hauling out its coal, which largely increases the output. The same company also operates 76 coke ovens. These ovens are so constructed that the waste heat from the burning of the coal used in making coke passes under large boilers and furnishes the power for the electric railway, electric-light plant, pumping engines, and for other purposes.

This property is well worth a visit from those who wish to see an up-to-date coal mine in operation, and is only a half hour's drive from Raton.

There are also a number of smaller mines operated by individuals in different places in the county.

Choice domestic coal is sold at $1.50 per ton in Blossburg, and at $2 per ton in Raton.

Nut and slack coal for use under stationary boilers sells at about 50 cents per ton.

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GOLD MINES.

In the mountains around Elizabethtown and Baldy, in the western part of the county, gold has been known to exist for many years, and many fortunes have been taken out of the rich placers in that vicinity. In 1866 quite a rush of miners went into the Moreno Valley. Elizabethtown had a population of about 3,000 people. A large ditch, 42 miles long, with many miles of wooden flume and iron pipe, was constructed to furnish water for hydraulic mining. These placers have been worked successfully ever since, but as the richest known diggings were worked out, many people left the camp with their fortunes made, or attracted by extravagant tales of rich "finds" in other localities.

These placers have produced several millions of dollars, and some new mining machinery now being put in for working the rich "flat placers" will greatly increase the production.

Quartz mines were discovered over twenty years ago; but as no quartz was considered of any value unless it showed free gold to the naked eye, only a few of the richest mines were worked. Of these the Aztec, near Baldy, produced $21,000 in a single week with a 10 stamp mill, and altogether produced over $1,000,000 through the same mill, although the deepest workings in the mine were only 300 feet below the surface.

The richest ores in the district are more or less refractory and require some other treatment than the old-fashioned amalgamating process heretofore used in the camp. This is now receiving the attention of intelligent mining men, and within a short time smelters, concentrators, and other improved methods will make this a thriving camp.

Recent rich discoveries have filled the mountains with prospectors, and hundreds of new mining claims have been staked out.

Ores of silver, copper, lead, and iron are found in abundance throughout the district.

The regulations recently adopted by the Maxwell Land Grant Company are very liberal, and under them a patent can be secured for a claim 1,500 feet by 300 at any time within two years from discovery at a total cost of about $200.

Some recent discoveries of gold, silver, and copper ores in the Urracca and Bonito country, upon the lands of Francis Clutton and Harry Whigham, have caused quite a rush of prospectors to that locality, and these gentlemen offer the same terms to prospectors as the Maxwell Land Grant Company.

Several railroad companies have extended their surveys into this mining country, and some of them will probably soon be building in that direction.

At present the nearest railroad point to the mines is Springer, on the Atchison, Topeka, and Santa Fe Railway, from which place the trip to the mines is made by stage in one day over good roads through the Cimarron Canyon and a beautiful mountain country.

The other mineral resources are varied. There are deposits of plumbago and fire clay, as yet unworked.

Near Springer there are extensive deposits of natural cement plaster now being opened up, and also large quarries of cement rock which produces a natural hydraulic cement.

Petroleum is found in the rocks a few miles west of Springer, though no wells have been sunk.

There are two good flowing artesian wells near Springer, one of which belonging to Mr. John C. Taylor furnishes a mineral water possessing

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valuable medicinal properties and is a pleasant table water. This water is bottled and shipped to the towns and cities along the Atchison, Topeka and Santa Fe Railway. The geological formation is such that artesian water may be confidently expected at depths of from 150 to 1,200 feet all over the prairie portion of the county.

STOCK RAISING.

Colfax County is an ideal stock-raising country. It is cool enough so that all animals grow to proper size, yet warm enough in winter so that cattle, sheep, and horses require no artificial shelter and little or no food beside the nutritious natural grasses which cure on the ground.

Until a few years ago this county was the home of large herds of cattle running at large on the open ranges; but from various causes, chiefly overstocking and hard times, the large herds have been sold off and the business has undergone a radical change.

Now there are more and smaller herds of well-improved cattle, generally kept in pastures, and the most successful cattlemen provide alfalfa and other hay to feed their stock whenever necessary on account of short grass or storms.

On some of our best farms are herds of thoroughbred Herefords, as fine as can be found in the United States.

The high prices of cattle for the last year have been very encouraging, and the profits are much greater than under the open-range system.

This is also a fine sheep country, and there are numerous large flocks, chiefly in the eastern part of the county. The percentage of increase is very large. The wool is of the best, and the expense of raising and caring for the sheep comparatively small.

Hogs are raised here at very little cost. They thrive well in the alfalfa fields in summer and in winter they live on the alfalfa hay and artichokes, which produce large crops and are left in the ground to be eaten by the hogs as required.

There are now about 30,000 head of cattle on the ranges of Colfax County, and about 1,000,000 head of sheep, and the farmers and stock-raisers of this county, together with the mine owners, constitute some of the wealthiest men in the Western country.

DAIRY FARMING.

Dairy farming pays well, and there is a good home market for milk, butter, and cheese, as well as for poultry, eggs, honey, and other products of the farm.

HORSES.

When the advantages of this altitude and climate for breeding and growing race horses become better known the fast horses of the country will be raised and trained here.

Our horses have better lungs, smaller, stronger, and more elastic bones and tendons, and greater endurance than those of any other part of the United States, and they have the speed, mettle, and staying qualities of the Arabian horses from which the fast race horses of the present day are descended.

TIMBER.

There is a large area of timber in the county which is being worked up into lumber, bridge timbers, props, railroad ties, and telegraph poles. A number of sawmills constantly in operation furnish a good supply of timber for building for all purposes at reasonable prices.

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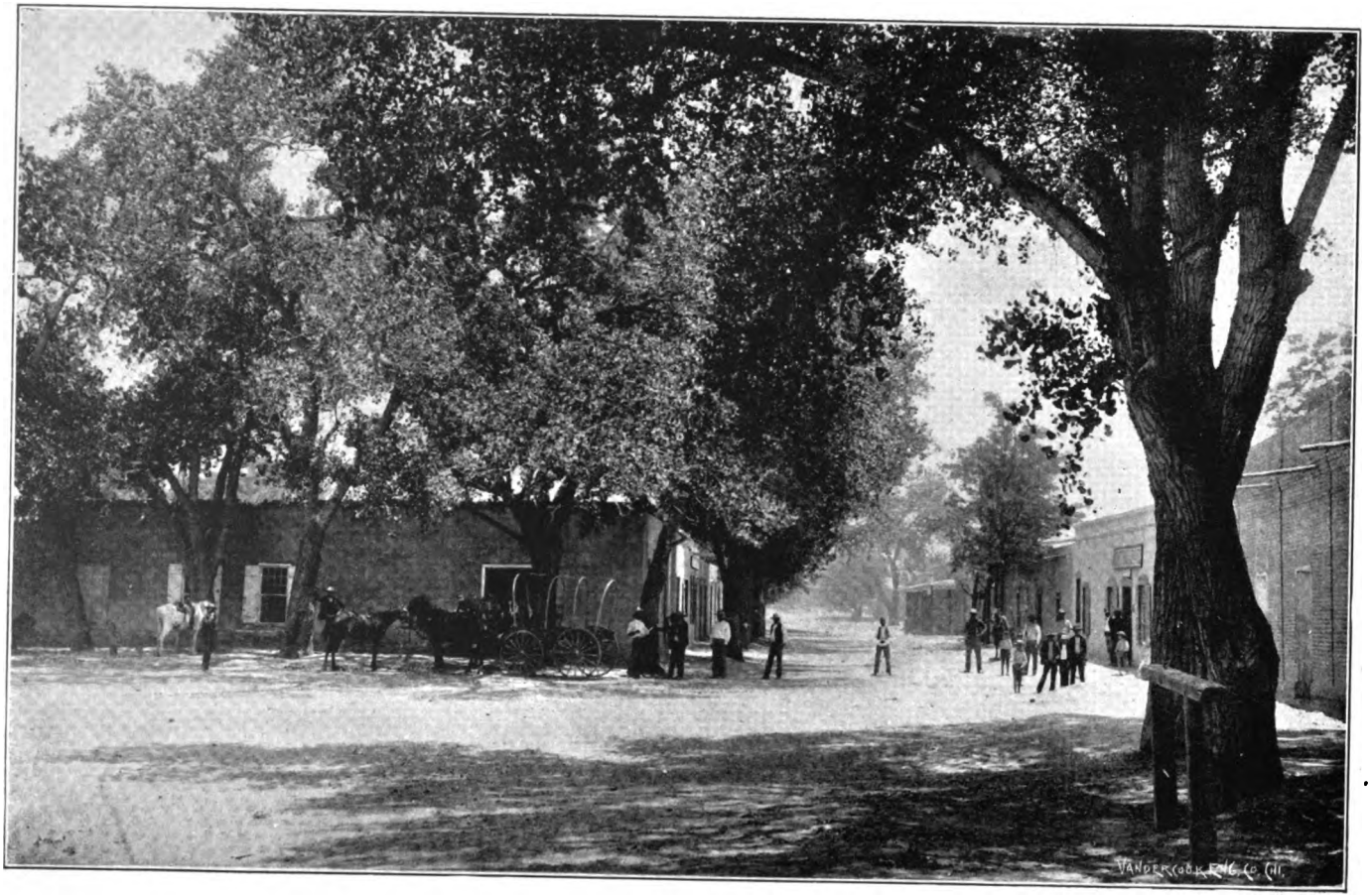

STREET SCENE IN THE TOWN OF MESILLA.

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Great changes have taken place here in the last quarter of a century. When the Santa Fe trail was first opened through New Mexico Colfax County was the home and hunting grounds of the Ute and Apache Indians.

The plains Indians, the dreaded Comanches, up to the year 1874, made frequent warlike incursions into the county, killing settlers and driving off their stock. Under the leadership of such intrepid men as Kit Carson and Lucien B. Maxwell, who lived at Cimarron, Colfax County, R. L. Wooten, and others, the settlers, aided by the Utes and Apaches, who were generally friendly, and the United States troops, finally subdued the Comanches. The other Indians were removed to Government reservations about eighteen years ago. Then followed the usual experience of a frontier country, with "road agents," "rustlers," and desperadoes. Then came the days of the cattle kings and the festive cowboy, with his lariat, big spurs, and ever-present six-shooter.

The reign of the "cattle kings" was short. They made way for the small ranchmen and farmers. The grama grass grows now over the old Santa Fe trail; the days of the six-shooter are gone, never to return; and soon only pictures and legends will be left of the wild and woolly cowboy. The wooden plow of the native has been replaced by the modern sulky plow, the reaping sickles by the self-binder, and on our best farms can be found all the latest improvements of husbandry.

Life and property are as safe here as any place in the world, and persons seeking healthy happy homes, where the investment of moderate capital will yield handsome returns, will search the world in vain for a better place to locate.

When the people in the crowded regions to the east of us learn the beauties of our country and climate; when they ascertain that the things which make life a burden to many of them—the sultry heat of summer, the extreme cold of winter, cyclones and blizzards, floods and droughts; consumption, malaria, asthma, hay fever, and a host of kindred diseases—are things unknown in this favored land, many of them will come to New Mexico as a place of rest from the storms of life.

The people of Colfax County, the gateway to New Mexico, will always bid them welcome.

DONA ANA COUNTY.

ITS RESOURCES AND FUTURE PROSPECTS.

Dona Ana County is situated on the Mexican boundary line, between Grant County on the west and Eddy County and the southwest corner of Texas on the east and south. On the north it is bounded by Lincoln, Sierra, and Socorro counties. It contains 8,200 square miles and includes a country almost unrivaled in variety of soil and climate. It is provided with about 200 miles of railroad, in the shape of a triangle, formed by the Santa Fe route and the Southern Pacific Railway. They start from El Paso, a few miles from our boundary line, the former running north to Rincon, then branching off southwesterly to Deming and Silver City, and the main line running north via Colorado to all points in the United States, the Southern Pacific running through the southern and eastern part of the county on its way to the Pacific coast. Seven large trunk lines are tributary to this county, giving us an outlet to all parts of the world. A new railroad is being built from El Paso through the eastern end of this county, which will tap large coal and mineral deposits, gypsum beds, and one of the largest forests in the world. This road will also soon connect with either the Rock Island or Santa Fe, and will have through connection with the Eastern St

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Dona Ana County lies almost wholly in the basin of the Rio Grande River, which flows through it in a southwesterly direction, carrying water enough, if properly utilized, to make a world-renowned granary and vineyard. An English syndicate is making arrangements to build a large storage reservoir, canals, etc., which will cost about $2,000,000, and when completed will hold sufficient water to irrigate several million acres of land.

Irrigated land will yield double, and sometimes three times, the amount produced on Eastern farms, and a sure crop is guaranteed.

Stretching around it, and beginning at the Florida range of mountains as its mid-western boundary, Good Site, Santa Magdalena, Sierra Caballos, the Sacramentos, Jarillas, Huerco, and Franklin ranges of mountains, while the Sierra, Oscuro, San Andres, Black Mountain, and Organ Mountains pass through its center in a grand and beautiful series of peaks. The White Mountain, in the northeastern part of the county, is over 13,000 feet high and is perpetually covered with snow The southwestern corner of the county is included in the sink of the Mimbres. Here springs abound and water is everywhere obtained at a slight depth. The mineral richness of this portion of the county is great, as it is also in the Organs, Black Mountain, and Jarilla ranges, gold, silver, lead, copper, coal, and turquoise being the predominating ores.

The Mesilla Valley is bounded on the east by the Organ Mountains, on the west stretches a high table land which breaks down from the Magdalena Mountains. Large cattle ranges dot here and there this large mesa.

Las Cruces is the commercial center of this rich valley, and is the county seat. It has a population of 3,500. Here are located the Territorial and Government agricultural college and experiment station, with over 200 students, the Academy of the Visitation, a Catholic academy for young ladies, first class public schools, and two mission schools, which furnish every educational advantage for the young. It has three weekly newspapers; its streets are systematically arranged and named, each corner being labeled with the names of the two passing streets. Las Cruces has three churches, Catholic, Presbyterian, and Methodist. Here are located twelve large stores, several of them containing an immense stock of varied merchandise, the stores and buildings occupying acres of ground, three drug stores, three barber shops, two large modern flouring mills, and a canning factory. One comes here and sees the wide alfalfa fields growing, luscious orchards, grain fields, and vineyards, and is impressed with the beauty of the scene. All kinds of semitropical fruits grow here in abundance. Our surplus product is shipped all over New Mexico, Colorado, Kansas, Nebraska, Missouri, and as far east as Chicago.

The Mesilla Valley proper is about 50 miles in length, and averages about 10 miles in width, containing about 500 square miles, aggregating 32,000 acres of irrigable lands, surrounded on all sides by foot hills of the adjacent mountain ranges.

This section compares very favorably with other portions of New Mexico. The Territory is of a generally mountainous character, very rich in mines, timber, and live stock, while the Mesilla Valley is devoted to agricultural interests, horticulture, and live stock exclusively.

The Territory of New Mexico is over 400 miles in length north and south, and the altitude of the northern portion is from 6,000 to 9,000 feet, while the Mesilla Valley is but 3,500. The Territory presents a great variety of climate, the Mesilla Valley being semitropical, with

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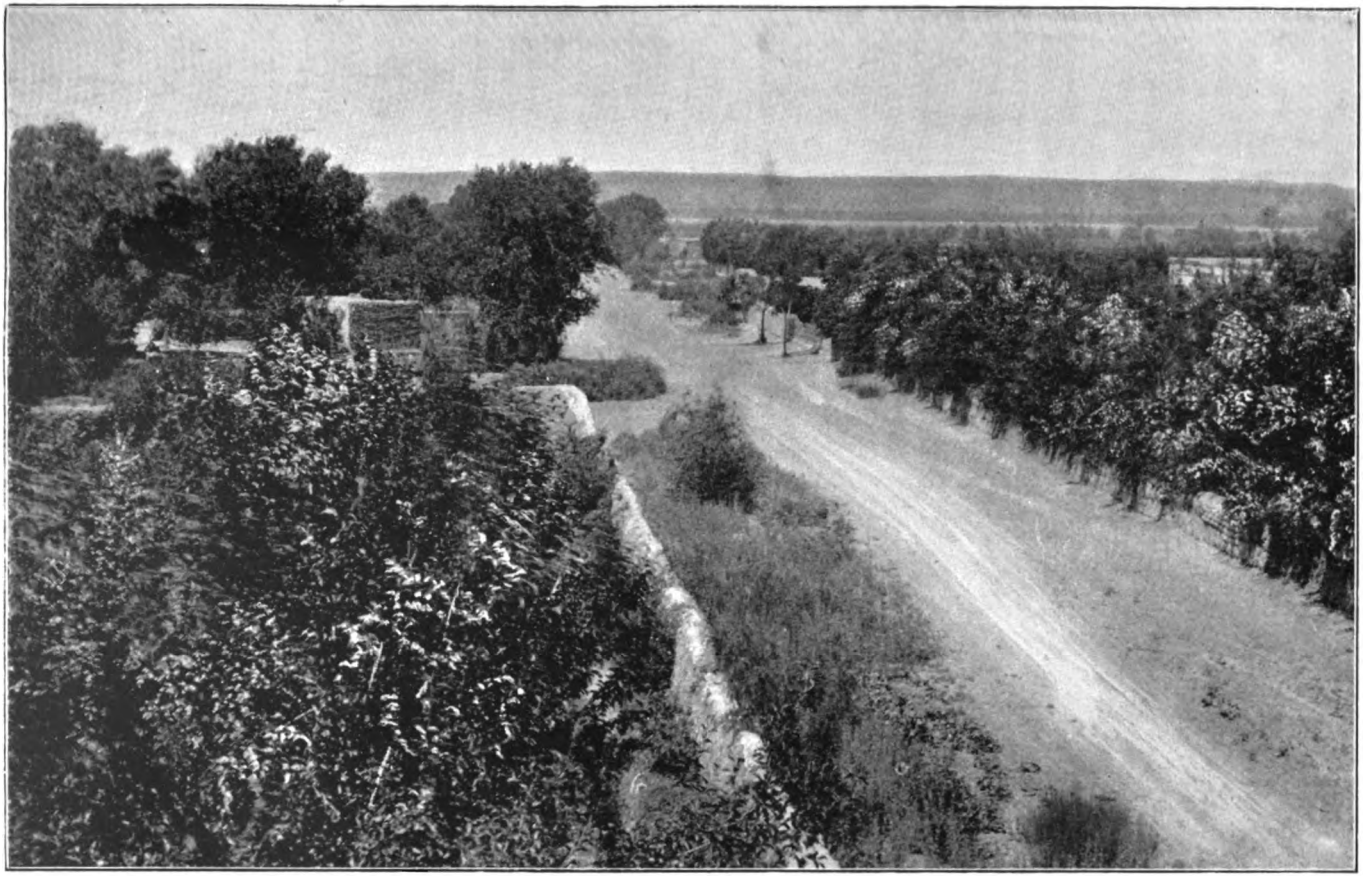

ROAD BETWEEN THE TOWNS OF LAS CRUCES AND MESILLA.

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little frost and snow. The thermometer very rarely goes to 5 above zero. In July, August, and September the temperature is from 75 to 95 degrees, sometimes going up to 100 degrees. There is always a pleasant breeze, and the nights are simply delightful. A temperature in the east is far more prostrating and dangerous than the highest temperature experienced in the Mesilla Valley; the absence of humidity in the atmosphere is the cause of this.

The average rainfall is 6 to 10 inches. It usually rains a day or two at a time with intervals of weeks of cloudless weather. Violent storms are practically unknown. We have some little wind during the months of February and March, but such windstorms seldom average over 12 miles an hour.

This valley is a natural sanitarium for lung and throat diseases, the climate being very favorable for such affections. Most sufferers of this character coming here are greatly benefited, and if they do not put off coming too long permanent cures are effected. The climate needed for pulmonary troubles is a mild dry climate. The Mesilla Valley has just the climate to cure consumption and kindred diseases, and eminent specialists now recommend our valley for this purpose.

Malarial or epidemic diseases prevail less than in any other part of the United States. The dryness of the atmosphere is unfavorable to the transmission of disease germs.

The soil is composed of the accumulated washings from the surrounding hills, made up of the fine particles that have been, during countless ages, disintegrated by frosts or the chemical action of the atmosphere. The water from the Rio Grande charges the land after every irrigation with new fertility. The sediment left on the land after every irrigation is almost equal to any fertilizer extant, the vivifying liquids bearing strong fertilizing elements, similar to the waters of the Nile in Egypt. This is no theoretic idea, thousands of acres of growing crops under irrigation rival in luxuriance those found in the world-famed valley of the beautiful Nile.

Analysis of the soil, taken from the November bulletin of the New Mexico Agricultural Station, located in this valley, shows the following: "About 8,139 pounds of sediment will be added to each acre in one year by using 2 feet of water. This would make a uniform layer about a quarter of an inch thick, and would contain 1,821 pounds of potassium sulphate, 116 pounds of phosphoric acid, and 107 pounds of nitrogen. In addition to this, about 90 pounds of potash would be supplied by the water itself. The soil is durable and as nearly inexhaustible as any known soil. The Indians and Mexicans have raised wheat and corn upon these lands continually since the advent of the early mission of the seventeenth century."

The water for irrigation is applied in the following manner: For grain and alfalfa the water is applied by flooding the entire surface of the land between the borders, usually 50 feet apart. For fruit it is run in furrows near the trees or vines.

Owing to the fact that the lands of the valley are nearly level, having only a slight fall to the west or east, sufficiently to carry water, there is little cost for leveling and preparing the land for irrigation, as $1 or $2 per acre will generally cover the whole expense connected with such preparation. Deep, thorough, and frequent tillage is the only treatment of the land required, no fertilizer being necessary. The water costs from 40 to 75 cents per acre. Perpetual water rights are attached to the land, entitling the owner to all the water required for irrigation as long as water remains in the river. The water for irri-

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gation of this land is obtained from the Rio Grande by means of irrigating canals. Experience necessary in raising fruits and crops can be easily and rapidly acquired. The leading and most profitable varieties of fruits are peaches, apricots, apples, pears, grapes, and quinces, and all kinds of berries.

The Territorial market consumes the greater part of the fresh fruits. The surplus is shipped in refrigerator cars, or dried and canned for the Eastern markets.

Fruits are not the only product of the soil; there is a large acreage of alfalfa, wheat, and other grains.

EDDY COUNTY.

PRINCIPAL POINTS OF THE YEAR'S HISTORY.

Eddy County has continued to forge ahead in material progress and prosperity the past year. The advantages and institutions possessed by this section, and which were outlined in my last annual report, have been increased and added to, while new features, then only in contemplation, have been developed and opened up.

Each succeeding year but proves the merit and value of irrigation farming in the Pecos Valley. As the farmer more thoroughly comprehends its possibilities and results, he appreciates how superior it is to the old methods. From despairing hope that the needed rains will come, a change is made to the certainty of moisture, and plenty of it, at the right time.

The Pecos Valley admittedly offers the best advantages for irrigation farming in the entire West. Thus fortunately and richly favored, the effort is being made to colonize this portion of New Mexico with a thrifty, enterprising, and frugal class of farmers—those who appreciate the privilege and desire to avail themselves of the opportunity to provide themselves with a home.

The farm is a home; not a place to be lived at to-day and moved from to-morrow, but a home to be improved and beautified, a home where orchards are to be planted, where vines are to be grown, where substantial things are to be constructed, where children are to be born and fathers are to die. Into the fields come and reap new generations; out of the fields and into the graveyards pass old generations; and this is the class of farmers who are wanted, and are coming in, to till the soil and establish homes in the Pecos Valley.

There are people in the East who have their eyes turned westward—young men, middle-aged men, all classes, who are constantly looking for opportunities in the West, and who go to make up that ceaseless tide of humanity that flows to the sunset side of the continent. There are thousands of young men and others further on in years in the Eastern and Atlantic seaboard States who have seriously in mind the question of accepting Horace Greeley's advice, "Go West, young man; go West." They have fostered the idea since childhood, when all that detained them was the representation that the West was a boundless waste, populated by savages, cut-throats, and lawless men.

Now the advice given in the great cities of the East is not to go West, for there is no West; that it is built up; that all the golden opportunities have been snapped up long ago; that the paths leading to fortunes are crowded, and that those who join in now are sure to be hindmost, and, consequently, subjects for his Satanic Majesty.

All this is in a measure true of many of the Western States, but not of southeast New Mexico, the portion incorporated within the Pecos

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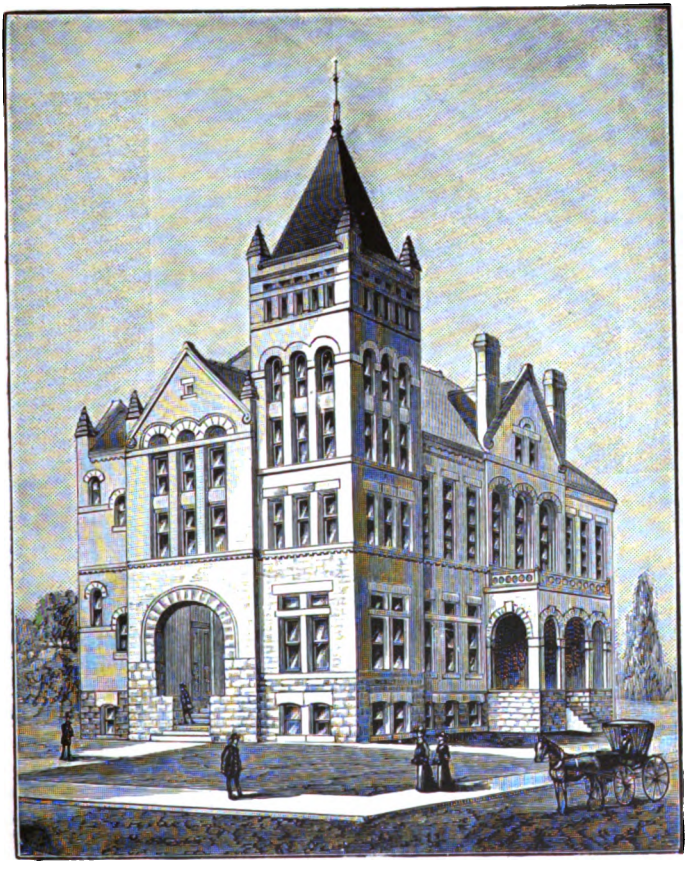

EDDY COUNTY COURT-HOUSE.

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Valley. The Pecos Valley is a section which it is confidently believed leads all others, not only for the pursuit of man's primeval occupation, the tilling of the soil, but as a dwelling place, the home of the health seeker and invalid and those in pursuit of happiness.

NEW LINE OF RAILWAY.

As a means to this end, and as a valuable adjunct to the increased and greater prosperity of the valley, the present construction of the Pecos Valley and Northeastern Railway is probably the most important event in the year's history of this section. As outlined in my last report, the operated line of railway in the Pecos Valley was from Pecos, Tex., to Roswell, N. Mex., a distance of 164 miles. This road is now being extended to Amarillo, Tex., a distance of 208 miles, making the whole road 372 miles in length. The contract for construction stipulates that the road be completed and turned over to the operators by December 15, this year, and there is no reason to doubt that it will be strictly complied with.

The completion and operation of this line means much in every way to the Pecos Valley.

The country tributary to the line from Amarillo to Pecos is the largest and best cattle-breeding territory in the whole Southwest. South of Pecos City to the Rio Grande, a distance of over 200 miles, the country is filled with cattle, which are now shipped over other roads via Fort Worth or driven across the plains and shipped from Amarillo and Panhandle, Tex. Considering these places as one, they constitute the largest initial cattle-shipping point in the United States. They average now fully 180,000 head annually. Some of them go north over the Fort Worth and Denver road to Wyoming and Colorado, for summer feeding. Cattle from southern Arizona and from New Mexico arriving at El Paso are at present taken by train east to Fort Worth (615 miles), thence northwest to Amarillo (320 miles), and delivered to the Santa Fe for the feeding grounds in southern Kansas, the route making two sides of a triangle. Many thousands of stock cattle ("feeders") are also shipped from this territory over the Atchison to points in Kansas, or delivered by it to the Chicago, Burlington and Quincy road for transportation to the pastures in Wyoming.

With the new transportation facilities, the business of fattening cattle for the Kansas City and Chicago markets on the cheap food raised on the irrigated lands in the Pecos Valley or on the refuse from the sugar factories will assume large proportions. One hundred thousand tons of sugar beets will make 40,000 tons of beet pulp, which is excellent for fattening and dairy purposes. It is estimated by those who are thoroughly familiar with the business, including F. P. Morgan, who has been live stock agent for the Atchison in charge of the cattle traffic in this section of the country for the last eight years, consequently well qualified to judge of its extent, that this line will carry, from all points on it to its connection at Amarillo, at least 18,000 car loads annually.

The fact that all cattle hauled through Fort Worth for Northern markets or for feeding grounds during the months in which the great bulk of them are shipped have to go within the United States quarantine or infected district, necessitating their being subject to stringent regulations, occasional delays, and to be viewed with suspicion, while if shipped over the Pecos Valley and Northeastern Railroad they would be entirely clear of quarantine regulations, is a sure guarantee that the greater part of all the cattle south of the Texas and Pacific and "

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coming from the south and west of El Paso for the Kansas, Wyoming and Montana feeding grounds would be hauled over the Pecos Valley route.

The greater part of the country between Amarillo and the Pecos River northeast of Roswell is a large, level plateau covered with grass, ample water of first-class quality being easily obtained by means of drive wells, the water being raised to the surface by windmills. The rainfall in the greater part of it is sufficient for sorghum cane, millet, Kaffir corn, and other good cattle feed. The land is largely owned in moderate-sized tracts by those who live on them and raise cattle for market. From the force of competition, the necessity for more room, and the fact that sheep can be raised cheaper and are healthier in the more open country of the southwest, the sheep and wool industry is gradually moving in that direction from the central portions of the United States. The Rio Grande on the south and the mountains to the west of the valley make a natural division in this part of the country, and flocks are increasing very fast. The mild winters and good feed increase the percentage of lambs and fit them for early market. With the building of the new line this traffic will be greatly stimulated. Several good supply and cattle-shipping points for the immense country north and south of it will be established on the new line.

Thus briefly can be seen what effect the new road will have upon the Pecos Valley districts of New Mexico.

STOCK-FEEDING INDUSTRY.

An industry with which Eddy and the Pecos Valley has identified itself the past year, and which gives promise of expanding to mammoth proportions within the immediate years, is the fattening of sheep and cattle on alfalfa for the eastern markets. It is not only a profitable industry by itself, but in conjunction with Pecos Valley agriculture, it will prove a most gratifying source of financial returns to the farmer. Since the fall of 1896 the sheep industry in the valley and the adjacent territory has more than trebled in value, and in the amount of income realized from it. The encouraging conditions have caused the investment of a large amount of capital in sheep, and the returns realized have placed the business in the list of the most desirable for remunerative investment. A large number of fine rams have been purchased by flock owners for the purpose of improving either the mutton-producing or wool-bearing qualities of their flocks. The important feature has been firmly established in the past two years that one of the most profitable and satisfactory methods of utilizing alfalfa pastures is the raising of mutton lambs. Every practical experiment made in that direction has brought success, and there is every indication that the business will prove particularly attractive to persons of means whose condition of health compels them to seek an outdoor life, but requires also that they must be surrounded with the comforts of home and avoid exposure. In sheep, as in cattle, a good manager can not help but succeed. Fattening lambs for shipment has in the past been slightly handicapped for the lack of direct rail connection with the Eastern markets. Last year about 18,000 or 20,000 head of sheep and lambs were driven out and fattened in Colorado or Kansas. It was impossible to feed them in the valley because they could not be shipped out when fattened on account of the long railroad haul.

With the advent of the new road—the Pecos Valley and Northeastern, now building—things will be in a different condition. Instead

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of having to drive lambs across the country to some point on the Santa Fe, they will feed them right here. It will be only a few years when Pecos Valley lambs will be as well known on the Chicago and Kansas City markets as Colorado lambs are now. Alfalfa, corn, and lambs make a good combination. It is an industry full of promise. It brings money to the owner of large flocks who ranges his sheep. It affords the farmer a home market for beets and grains, makes a demand for his pasture, and affords him an opportunity of having a flock of his own on his farm, thus providing a crop of lambs for spring sales, the returns from which will be a neat sum to place on the profit side of his farming operations. Owners who allowed their sheep to go because wool did not pay have discovered that they made a mistake. A sheep is worth more now than the sheep and wool combined a few years ago, owing to the increased demand for better mutton. Farmers who have tried cattle, sheep, and hogs give sheep the credit of bringing the highest profit in proportion to capital invested, and in another decade the sheep of this country will be more valuable, because they will average larger size and be of better quality for market.

There is not the slightest doubt as to the merits of sugar beets as a fattening feed. The Pecos Valley can and does raise them in abundance. Alfalfa is a forage unexcelled. It likewise flourishes in no other section with greater luxuriance than in the Pecos Valley. What corn is needed can be produced here, or, if desired, when the new line of railway reaching to the East is completed, the cheap Kansas article can be brought in at a slight expense. A judicious feeding of the combination, and train loads of "early spring sugar lambs" should go out from the Pecos Valley to scoop the Eastern markets.

This is not a fanciful picture. It is a very present fact, being practiced yearly in Colorado and Northwestern States, with much profit to those engaged therein. An abundance of feed, a mild winter climate, freedom from disease, and other natural characteristics, which can almost be said to be peculiar to this particular section, make the plan as outlined a particularly inviting one. It promises rich financial gain to those who identify themselves with it and who carefully and intelligently encourage and foster it.

Owners of cattle are following along similar lines. Their stock is being improved, and the tendency is toward pure blood and high-grade animals. Winter feeding is being quite generally practiced, and it will only be a short time till Eastern markets will be supplied with a most desirable article of alfalfa-fed beef.

CELERY PRODUCTION.

A product in which the Pecos Valley is gaining special distinction is its celery. It is an industry which is developing rapidly, and constantly acquiring new markets. The most extensive production of this delicacy is near Roswell, on the Spring Brook Celery Farm. The farm is watered by a great spring of water bubbling from mother earth, which, combined with the continual sunshine peculiar to the Pecos Valley and the saline nature of the soil, makes a combination for growing a high grade of celery not possessed by any other country. The constant sunshine, which blushes the apple, crimsons the cherry, ripens the golden grain, colors the flowers, and flavors the fruits with the choicest essence of nature's brewing, is no less potent in storing up those essential qualities in celery that raise it to a standard excellence, surpassed by none, equaled by few, and may be well said to bear the same relation to the

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celery trade as gold to the monetary system. The celery raised in the Pecos Valley is pronounced, by those qualified to judge, superior to that raised anywhere else in the United States, and the fact that it leads all competitors in every market it has reached would seem to verify the assertion, particularly when it is known that it came in competition with the product of the most famous celery farms in the whole country. The soil of the valley seems to possess to a marked degree the constituents which impart to this table delicacy the peculiar nutty flavor so much sought after by epicures. The Spring Brook Farm has proven a full success, both in the production of the vegetable and in marketing it to financial advantage. The Roswell Register notes this fact in a recent paragraph, which says: "W. M. Farmer has just received returns from his last shipment of celery. The total figures show that, in addition to supplying the local demand, he shipped out 88,815 pounds. The express bill on this was $1,389.80. The gross income realized at the farm for the crop of twenty acres was over $6,000.

The planting on this farm has been increased to 25 acres this season, while all over the valley farmers are putting in beds of greater or less extent.

NEW MEXICO'S BEET SUGAR FACTORY.

The second campaign of the Pecos Valley Beet Sugar Factory, which had just been inaugurated at the time of transmittal of my last annual report, proved very satisfactory and successful. The supply of beets, while slightly curtailed, was sufficient to permit a campaign of reasonable length, and the result was very gratifying. This season the acreage planted in beets has been largely increased, and the number of tons which will be delivered to the factory which commences its third campaign during October will far exceed that of any previous year. The farmers have learned by experience the manner of cultivation of the crop which insures success, and each succeeding year finds them more enthusiastic than ever over its certainty and gratifying financial returns. The management of the factory is engaged in making extensive improvements in the machinery, that the beet crop may be more expeditiously and profitably handled. It can be said that the present factory has revolutionized farming methods in the Pecos Valley, and is and will prove the medium making small and diversified farming profitable. Experience in other beet-growing districts proves that the best results are attained where only 10 or 15 acres are allotted a grower. More careful attention results, and better returns from the crop follow. This is the plan which the company is striving to inaugurate here, and while necessarily its adoption is slow, it will ultimately be accomplished. Recent bulletins issued from the United States Department of Agriculture show that from all the tests made of beets from every portion of the United States, those grown on the irrigated lands of the West proved to be the richest. Pecos Valley beets, both in sugar content and purity, were at the top rank.

With a combination of the beet-sugar and stock interests, the Pecos Valley is guaranteed a magnificent future from these alone, but added to the many other equally as important and profitable interests, the success crowning the coming years is placed beyond the pale of peradventure.

EDDY HAS A CREAMERY.

AN OPPORTUNITY FOR VALLEY FARMERS.

In detailing the improvements, the advantages, and the industries with which Eddy is supplied, The Argus has entirely overlooked a young industry which promises much for the future and already offers an exceedingly favorable opening for profit

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SPILLWAY, EDDY IRRIGATION RESERVOIR.

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to valley farmers. Reference is made to the creamery of the Hillside Dairy Farm, owned and operated by F. E. Bryant.

Already the establishment is equipped and arranged in a manner which would reflect credit upon a community much larger than the one in which it is located, but there is no disposition to stop now; further expansion is contemplated, and with the co-operation of the farmers of the valley, will soon be a reality.

The Hillside Dairy Farm is well known to the people of Eddy, being the medium through which they are supplied with milk. The stock of the farm is pure bred, being mostly of Jersey grades, with some Durhams and Holsteins. They number about 70 head, cows and calves. Thirty-one of these furnish the daily supply of milk for the town and the creamery separator.

The creamery was put in primarily to utilize the surplus milk, which it is now doing, but it could handle milk from all the farms in the lower valley. It has been in operation a little over a month, and is meeting with the best of success.

The plant is housed in a neat adobe building, built especially for the purpose. Has cement floor, and provided with necessary conveniences. The separator, the principal piece of machinery, of course, has a capacity of 750 pounds of milk an hour, at a speed of 5,600 revolutions a minute. At the present time, as has been said, it is utilizing only the surplus milk, that remaining after customers have been supplied, which is about 400 pounds daily, resulting in about 14 pounds of butter in the same length of time. Mr. Bryant states that he could easily handle 2,000 pounds additional, and this quantity the farmers of the lower valley, if they are wise, will take steps to supply. A little organization, a little enterprise and work, the securing of favorable rates for the transportation of the milk on the railroad, and another item of profit will have been added to farm life in the Pecos Valley.

The present completeness of the creamery has not been effected without expense. The equipment represents the investment of considerable capital. The separator is operated by a 6-horsepower engine. The creamery proper is provided with a cooler to which the milk goes from the separator, passing from there to the cream bath, which has a capacity of 50 gallons, where the cream is kept at a certain and desired temperature to properly ripen, till time of churning. An 80-gallon churn is provided for the latter service, and is operated twice a week. In addition to this there is a butter worker for extracting the buttermilk from the butter, a milk tester for ascertaining the per cent of butter fat which the milk contains, and several other appliances.

But few people have a knowledge that Eddy is possessed of a dairy and creamery so complete in every detail. It is the nucleus of what in a very short time will prove a profitable and mutually beneficial industry.

WEALTH IN SULPHUR.

BEDS CLOSE TO A PECOS VALLEY STATION.

The following article on the sulphur beds lying just west of Guadalupe, on the Pecos Valley road, is taken from the El Paso Herald. A number of Eddy parties are interested in the deposits, having been engaged for some time in investigating them. During the past two months E. Miall Skeats, of this city, has spent considerable time there, and The Argus believes that he is very sanguine of the results. The article from the Herald is as follows:

"One of the greatest sources of the as yet undeveloped mineral weath of El Paso County lies in the extreme northeastern portion of the county, and is in the form of almost limitless deposits of nearly pure sulphur, easily accessible and requiring but little capital (chiefly for refining works) to place it on the market as a finished product. These deposits fill numerous patelliform basins or craters of extinct volcanoes on the plains southeast of the southern point of the Guadalupe Mountains, beginning 2 to 3 miles south of Delaware Creek and 12 miles west of Guadalupe station, on the Pecos Valley Railroad. So far they are known to exist on some twelve or fourteen sections of land, and are believed to extend over many more, though but twelve claims have been located and these but superficially prospected by shafts usually from 12 to 15 feet in depth, only one being as deep as 30 feet, and all these in nearly pure sulphur to the greatest depth attained. The region round about might be called a prairie, though dotted here and there with low hills overgrown with scrub cedar and covered with the finest grasses. Numerous springs of pure water exist in the vicinity, and Tinnin's great spring ranch lies 6 miles south.

"These basins or craters are usually from 600 to 700 feet in diameter, and toward the center it declines to a depth of 3 or 4 feet, the surface being a thin covering of blackened earth, strongly impregnated with sulphur, and presenting the appearance of having been blackened with sulphuric acid. In one shaft, sunk in the hope of

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striking water, a liquid was encountered at a depth of 15 feet, but on being tasted it proved to be very strong sulphuric acid, and when the taster hurriedly ejected it from his mouth, adulterated with saliva as it was, it stained deeply and did some injury to his coat sleeve. It is believed, however, that this acid is small in quantity, detained by some solid rock basin, and that it was formed by percolating rain water taking sulphur in solution as it descended.

"As indicating the process by which these vast masses of sulphur were deposited, time has left no trace. As the country round about is gypsum, it might be inferred that both minerals were deposited from sulphur springs, or springs containing sulphide of hydrogen, which sometimes deposits sulphur by the partial oxidation of the hydrogen, and gypsum by the more complete oxidation of the hydrogen. Such springs flowing into a basin lake then covering the region would pour limitless quantities of sulphide of hydrogen (only partially oxidized) down the craters of extinct volcanoes, thus ultimately filling them with sulphur to unknown and probably very great depths, while the impregnated water spread out in the shallow lakes would become more completely oxidized and deposit the gypsum beds now found surrounding the craters. Or, as the craters of extinct volcanoes (as in the case of Popocatapetl) are frequently found plugged with sulphur, it may be that this mineral, in a sublimated state, arose from great depth and was precipitated on the lips and walls of the crater until the orifice was filled. But, whatever the process of deposition may have been, it is certain that these deposits of sulphur are of such vast extent and purity that El Paso is destined to rival the famous sulphur deposits of Sicily, from which island the United States alone formerly imported $50,000,000 worth of sulphur annually.

"Near the surface of the basins in question, where more or less earthy matter has become mixed with the mineral, and even pebbles of foreign rock are embedded, the mass shows only about 60 per cent sulphur, but deeper down the sulphur is found almost pure (98 per cent) and in massive beds, finely lined with varying colors and resembling the finest yellow clay. Twelve different companies have already treated and partially prospected claims, and one of these companies has projected a railroad from Guadalupe Station, on the Pecos Valley Railroad, to the mines, there being already a fine wagon road to the south, extending 30 miles west from the Pecos Valley road. As these deposits are numerous, doubtless of great extent or depth, and are known to be exceedingly rich, the field is an inviting one for prospectors and small capitalists. The material can be mined and refined at little cost, and can be marketed at wholesale at $32 per ton for roll and $33 to $35 per ton for flour."

CLIMATIC—THE HEALTHFULNESS OF PECOS VALLEY CLIMATE.

The Pecos Valley is above all else a healthful section. It has long been known that the climate of the elevated region at the eastern base of the Rocky Mountains possesses wonderful curative properties in a wide range of chronic diseases, and particularly those of the throat and lungs. During the past twenty-five years thousands of people, most of them consumptives, have come to this region of pure, dry air and abundant sunshine; and a large majority of these have been cured or have found a measure of relief. It should, therefore, be a vast sanitarium, with an almost world-wide fame.

In no other part of this region are the general conditions more favorable from the standpoint of health than in the Pecos Valley. The altitude, which ranges from 3,000 to 3,800 feet, is that best suited to the majority of health seekers, being great enough to insure a dry and tonic atmosphere, and yet not so great as to develop any latent heart trouble. The rainfall is slight, and is confined principally to dashing summer showers. The sun usually shines from a cloudless sky. A delicate invalid can spend out of doors most of the hours of an average winter day. There is an exhilaration in the dry, light, tonic, and electrical atmosphere, and a charm in the continual sunshine that must be experienced to be understood.

It is also efficacious in the various forms of nervous prostration and dyspepsia; sufferers from rheumatism and neuralgia may also expect relief. In fact, most chronic troubles are cured or helped.

The best testimony as to the healing and life-giving qualities of the

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atmosphere and the general environments of the Pecos Valley is from the pen of Dr. Charles M. Whicher, a practicing and most competent physician of Eddy. He says:

For some years the appreciation by the medical profession of the value of the southeastern New Mexico climate as a panacea for many diseases of a constitutional character, and a sure relief for others, has been rapidly on the increase. The physician's faith and belief in this is well founded, for without doubt, had we some accurate record of the cases of invalidism that have come to this part of New Mexico, the Pecos Valley, these records would show a series of remarkable and astonishing reliefs, betterments, and cures of cases of disease previously considered hopeless. While the record in these cases can not be obtained to a certainty, yet there is one thing that can—the record of deaths. And it would seem almost improbable, did not facts back up the statement, that the number of deaths could be so few in such a comparatively thickly settled district.

In the whole county of Eddy, containing some 3,000 inhabitants, there have been but three deaths in the past six months, and all of these were infants. Of these, one death was caused by meningitis, one by cerebral abscess, and the third by congenital bowel trouble.

Is not this a health report of which any county might be proud? And where is any other county that can boast of such a record? Not one other, I venture to say. The almost perpetual sunshine, winter and summer, the pure, dry, and health-giving atmosphere, that knows no contamination from the passing in and out of cities and the habitation of man, comes direct to us from not distant mountains that reach far up into the blue heavens and gather for us the life-giving elements of pure air.

Primarily, this air of the Pecos Valley is for the sufferer from pulmonary troubles, and to such it is truly a godsend, for in the cure or relief of disease of this character the first requisite is dry air, the next pure air, and lastly, air of moderate temperature. The Pecos Valley has them all.

One visiting the Pecos Valley for the first time must evidence surprise when he sees, week after week and month after month go by without, practically, a day passing when the sun does not show itself—days which have been fittingly spoken of as but "samples of Paradise days." The advantage of these glorious days is enjoyed to the fullest extent by the invalid in walks and drives about the country, or in lying indolently in a hammock and reveling in the luxury of dry, pure air. It could be said with a great deal of truth that half the prominent residents and business men of the Pecos Valley are but walking advertisements of the health-giving qualities of this climate, for among them are many who came here for the express purpose of finding lost health and vigor, and to-day they are as well and energetic as ever, and happy in the enjoyment of sound health.

In my own practice—and I believe this applies as well to my fellow-practitioners—there has not been a single case of acute infectious disease in the valley during these six months. What few infectious diseases have been known in the Pecos Valley have been of a very mild type, never virulent.

The freedom from sudden and decided changes in temperature is one of the best points of recommendation in the Pecos Valley; all people, whether in poor or good health, are benefited by an even, moderate temperature. Of the dozens of cases of those afflicted with lung complaints who have come to the valley for relief, I know of but one or two instances in which the change was not of great benefit, and in many cases entire cures were effected. When an invalid waits too long, until almost the last minute, when death has a decidedly firm grip on him, the Pecos Valley is not to be blamed if he does not recover; but given a fair opportunity, the climate of this place will restore to health many cases which have elsewhere been considered hopeless.

The great point, then, with those contemplating a change of residence to this "natural sanitarium of the world," as the Pecos Valley has been well described, is to beware of procrastination. When Pecos Valley air does not aid those afflicted with pulmonary troubles, it will, as a rule, be found that "the thief of time" is in fault.

GRANT COUNTY.

In the extreme southwestern corner of the Territory, is cut in twain by the continental divide, and contains 9,524 square miles, or 6,095,360 acres—an empire within itself capable of supporting a population of 50,000 people. It is one of the most progressive sections of the Territory, and, unlike other portions of our country, it does not date its civilization from the days of Montezuma, though along several of the mountain streams of the county the caves at one time occupied by the

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"cliff dwellers" may yet be seen, some of them at almost inaccessible heights above the stream below. Some signs of more recent date than those of the "cliff dwellers" are found in the ruins of whole villages, the regularity of the structures showing a considerable degree of architectural science.

Grant county dates its settlement from the disbanding of the "California column" at the close of the civil war, and yet it ranks high in point of wealth, and has a brighter prospect than any of its sister counties at the present time.

The real prosperity of the county may be properly dated from the advent of the Atchison, Topeka and Santa Fe and Southern Pacific railroads, which cross her borders and infuse new life into the county by bringing in capital and affording transportation for her world of mineral wealth and the thousands of beeves which annually fatten upon her luxurious and nutritious grasses.

SILVER CITY,

The county seat of Grant County, and by far the most important town of southern New Mexico, is the most thoroughly Americanized of any city in the Territory. It is delightfully nestled amid rolling hills, and by common consent it has been designated as an ideal spot in which to pass an existence; as nearly a paradise as can be found on this mundane sphere, where the health-giving atmosphere serves as a welcome balm to all, more especially to those troubled with pulmonary complaints. Grant County generally, and Silver City especially, has been highly recommended by physicians, and scores of people visit this section yearly to derive the benefit of its health-giving climate, and when they return home, it is done with reluctance.

Unlike most western border towns, the business edifices are constructed entirely of brick and stone, with handsome iron and glass fronts, and finished throughout in a most substantial and elegant manner. The commercial importance of the town justifies the merchants in carrying stocks of goods greatly in excess of those usually found in towns of the same size. The city is the main supply point for a vast country surrounding, comprising both grazing lands and mining camps, and nearly all of the big monetary transactions of the county are made through the medium of the Silver City National Bank. All branches of business are represented here, and the learned professions find as able exponents as can be found in any town of the West.

The residence portion of the city is a flattering testimonial to the energy and prosperity of Silver citizens, and they are the source of admiration to all observers. Brick alone is employed in building, and the architectural style in vogue is highly complimentary to the residents.

Although the city is usually spoken of as a mining camp, it has none of the wild and woolly element to contend with. The population in point of intelligence will compare favorably with any town of like size in the States, and law and order is the element that holds sway.

Silver City is justly proud of her school facilities, which are of a high order and attract many students from outlying neighborhoods. Besides our public schools, in which there are many departments, we have one of the two normal schools of the Territory in successful operation. The attendance is large, and the standing of the profession in the different classes is fully up to the average of any of the higher institutes of learning elsewhere. The Sisters of Mercy conduct the Academy

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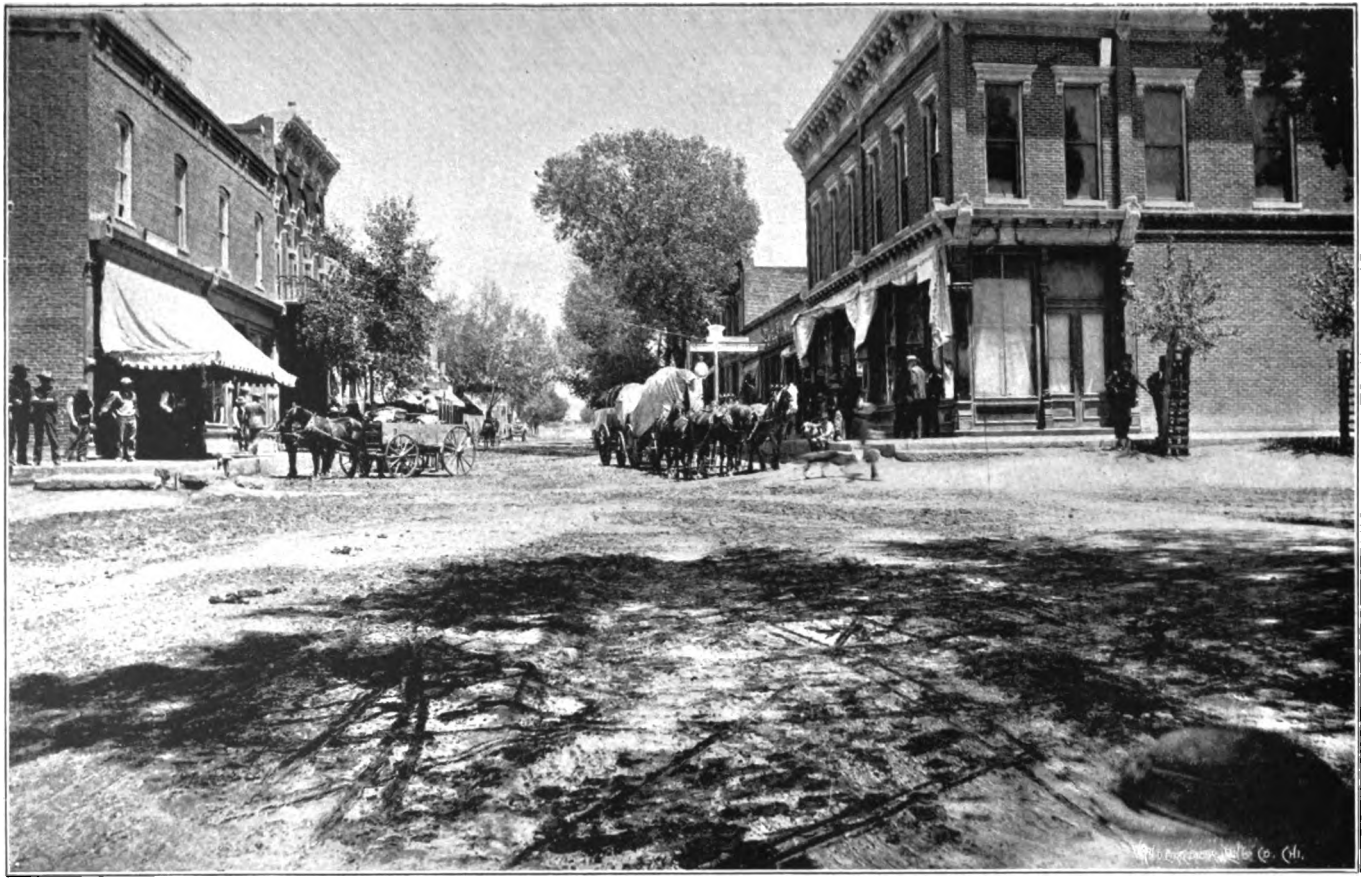

STREET SCENE, SILVER CITY.

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of Our Lady of Lourdes, where Catholic children are trained up in the tenets of their religion, as well as receive the benefit of a liberal education.

The city is on a branch of the Atchison, Topeka and Santa Fe Railroad, has a daily mail and telegraphic connection with the outside world.

Of churches there are but two, the Methodist Episcopal and the Roman Catholic, both having a fair attendance and each exerting its influence for good.

In the estimation of some enthusiasts, Silver City is the original site of the Garden of Eden, as all that tends to make life pleasurable is here found in reckless abundance, and to die without having seen Silver City is to have lived in vain.

MINING.

Silver City Reduction Works.—One of the most important enterprises in the Territory is located 1 mile below the city on the Atchison, Topeka and Santa Fe Railroad, and it has proven a blessing to the small mine owner as well as a necessity to the entire country, as ores in any quantity are successfully treated and settlements immediately made. This feature has been a godsend to the poor prospector and miner of limited means, as he is thus enabled to continue development work on his claim. The works here were a financial success before they were purchased by the Hearst estate; since then they have been enlarged, additional machinery has been put in, and other necessary improvements made, until to-day they have no superior and few equals south of Denver, Colo. Ores from Santa Rita, Hanover, Pinos Altos, the Burro Mountains, and other sections of Grant County, as well as from Sierra and other counties in the Territory, as also some extensive shipments from Arizona, are being treated here to the satisfaction of all parties concerned. By fair dealing the management has made the name of the Silver City Reduction Works a synonym for probity and square dealing. If unlimited capital and perseverance coupled with knowledge and sound business methods are any criterion by which to judge, then the Silver City Reduction Works have justly earned a reputation, as well as aided materially in advertising the illimitable mining capabilities of one of the richest mineral sections on God's footstool.

Cooks.—The leading lead-producing section of New Mexico is by no means the least important among the mining industries of Grant County. Since the discovery of mineral here, twenty years ago, the camp has been the busiest in the Territory and has given employment to hundreds of workingmen. The ore is principally a sand carbonate, rich in lead, and even at the present prices for silver carries enough of the white metal to more than pay all costs of extraction, shipping, etc., leaving the lead as clear profit. During the year 1897 the mines here produced 10,800,000 pounds of lead carrying 81,500 ounces in silver, all of which found its way to El Paso, Tex., and the major portion of which was treated at the International Smelter. The attention of the mining world has frequently been attracted to Cooks during the past few years by reason of the immense deposits of high-grade lead ores discovered, as well as the sudden rise to wealth of comparatively poor men, whom none envy, as they are justly entitled to all the good fortune which has attended their efforts.

Pinos Altos.—The old Spanish records in the custody of the Mexican Government at the city of Chihuahua tell of the discovery of gold at Pinos Altos by Gen. Pedro Almendaris, one of the early commandantes of the Mexican fortress at Santa Rita, distant 12 miles east, and where were situated the famous Santa Rita copper mines. The first discover-

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of gold by Americans was made on May 18, 1860, by Messrs. Birch, Shively, and Hicks. The camp was first called Birchville, in honor of Birch, who was the first to find the precious metal. Within six months 700 men were in camp looking for the golden lucre. In 1861 quartz mining was commenced, the Atlantic and Pacific lodes being located. Many other quartz veins were immediately located, the ores being reduced and the gold recovered by grinding and amalgamation in arrastres. From twenty to fifty arrastres were kept in constant operation until 1866, producing in the neighborhood of $300,000. Adding to this the gold produced from the placers, and the total of gold prod ced in the first five years would amount to over $500,000. Considering the crude facilities for operating the mines and the perpetual dread and uncertainty caused by frequent Indian attacks, it was a remarkably good showing. In 1866 a 15-stamp mill was erected by Virgil Marston. This, the first modern machinery in the camp, was quickly followed by other mills of the same kind, which were kept in constant operation upon the oxidized, free-milling ores from the surface of the veins. As depth upon the veins was attained the sulphureted ores were encountered, which proved a serious obstacle to the amalgamation of the gold by the processes then in vogue. In 1883 concentration of the sulphurous ores was attempted by Messrs. Place & Johnson, but the process was a failure for lack of experienced operators. In 1884 Peter Wagner made a success of the concentration process upon the ores of the camp, and the same year Messrs. Bell & Stevens purchased and put in successful operation the Place & Johnson concentration plant, which had heretofore been pronounced a failure. From that time until last year the ores have been worked by amalgamation and concentration of the tailings, the concentrated product being shipped to the smelting works.

The Bell & Stevens properties, purchased more than a year since by the Hearst estate, are being worked vigorously and systematically, and they are producing good results. The drifts on the Pacific 500-foot level show 1,760 feet of continuous workings, which will give fully two years of ore in sight, or sufficient to keep a mill of 100 tons daily capacity in constant operation. All of the latest improved machinery is being used, and additions are constantly being made as the occasion requires. The property is under capable management, and the best possible results are being obtained. The Old Pacific mill, situated 1½ miles north of Silver City, which has been until about one year past operated exclusively on ores from the company mines, is now being run on tailings, and the results are highly satisfactory. About 4,000,000 pounds monthly of concentrates is the product, all of which is being treated at the Silver City Reduction Works. The tailings are not sufficiently high grade to bear railroad transportation, but being treated near home, their working has proven extremely profitable.

The Atlantic and Deep Down properties are being worked thoroughly, and satisfactory results are being obtained. Up to within a couple of years past these properties had not been made to pay, but by the introduction of new management and improved machinery they bid fair to rank among the best in camp. A considerable force is being employed in and about the mines and mill, and everything is kept going continuously. The new pipe line, put in a year ago under the efficient management of S. S. Murphy, of Denver, Colo., has more than paid for itself several times over.

The Golden Giant, one of the standbys of the camp, is being operated by F. J Davidson with encouraging results. The ore chute on the '90 level has been struck 50 feet south from the shaft. A winze sunk

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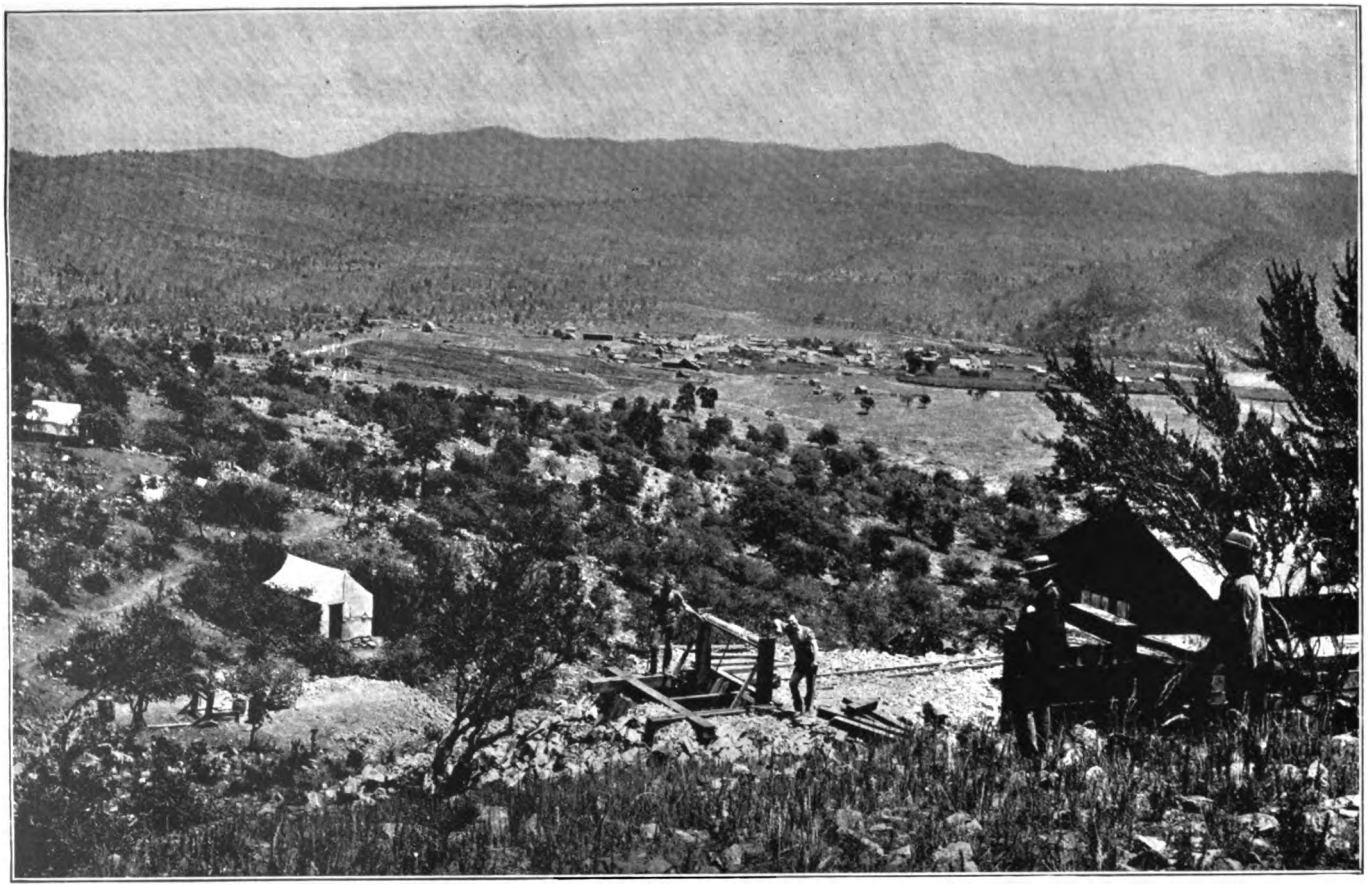

PINAS ALTAS MINING CAMP.

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in the bottom of the 300 level shows the same ore body at a distance of nearly 400 feet south from the shaft. The rich ore, it is believed, is continuous between the two points, thus insuring a length of over 300 feet along the vein.

There are innumerable other properties in the camp, all more or less celebrated as producers, but they can not all be properly described within the brief scope of this article. Suffice to say that, all and singular, they are desirable properties, and many of them in years gone by bore enviable records as gold producers.

The long dormant mines of this district are proving to be the greatest copper and iron producers of New Mexico, and will ere long take rank with the greatest copper mines of the world. In the basin of Santa Rita proper, the Santa Rita Copper and Iron Company, of which Mr. Dawson is general manager, owns seventy-seven claims covering nearly 1,500 acres in area, which may be said to be one vast body of ore. The formation is an isolated peculiarity in geology. It is unlike any other mineral bearing area known. The copper ore intimately permeates every portion of the formation in an area of more than 1,000 acres. The ores are contained in what appears to be a comminuted porphyritic débris, originally disintegrated exclusively from a great porphyry belt, by seismic or volcanic action and afterward solidified into a secondary porphyry by the heat and pressure of a superincumbent mass of trachyte, which was again capped with limestone. In the basin of Santa Rita the limestones and underlying trachyte have been eroded, thus exposing the ore-bearing porphyritic zone just described. By reason of the moisture from below, which probably filled the cleavages as a vapor on the application of the superficial heat, the ore-bearing porphyry was not completely reindurated and is therefore more easily mined. The copper occurs as native copper throughout the rock mass, also quite extensively as cuprite. Here also are found considerable bodies of those rich and rare oxides, tenorite and melaconite, some of the shipments of these ores in carload lots running from 40 to 50 per cent pure copper. This vast ore body does not conform in any particular to the generally known conditions of structure that exist in other ore veins or deposits, but the ore is generally disseminated throughout the entire mass of rock. For a leaching or concentration process on a gigantic scale this is probably the greatest opening in the world, as it has been sufficiently developed to demonstrate that it is one of the greatest, if not the very greatest, body of copper ore in the known world. At present there are 150 men employed in the mines, most of them working upon the tribute system, paying a royalty to the company upon every ton of ore extracted and sold, the lower grade ore, thrown over the dump, reverting to the company to be profitably utilized at some future time when proper appliances are at hand. Every one of the many tributers (as the leasing miners are called) are making more than ordinary wages, besides paying a good royalty to the owners of the mines, who run no risk whatever. The production of ore from these mines last month was more than 600 tons, which averaged over 21 per cent copper at the smelting works where it was sold. This ore is only the selected grade; the balance of the rock extracted would undoubtedly pay handsome profits with the proper machinery upon the ground to properly concentrate or leach the ore.

The iron mines of the Santa Rita Copper and Iron Company under the control of the Hearst estate employ a large force of men and ship six cars of ore daily to the Pueblo, Colo., smelter. The iron is of the highest possible grade and is readily sought by smeltermen for fluxir

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purposes. The output of these mines will be greatly increased in the near future.

Hanover.—The copper mines of this old camp have lain idle for a number of years, or, if worked at all, only in a desultory manner. Now, however, they are being worked vigorously, and they are on a paying basis once more. In the old Hanover mine a big body of copper average ore has been shipped to the smelter which yielded 14 per cent. One hundred and eighty thousand dollars' worth of ore has been taken out of this property during the last few months, and as the mine is being exploited additional bodies of ore are being uncovered. The working force is being augmented as opportunity offers, and the entire force of workingmen now employed are all engaged taking out pay, no dead work being necessary.

Central.—Situated about 7 miles due east from Silver City is one of the most important mining camps in Grant County. It is essentially a poor man's camp, the ores, many of which are near the surface, being unusually rich in the precious metals. Silver and lead, however, predominate, but gold, both quartz and placer, is found in paying quantities. A few years ago a find was made on the Scotch Lass, which can only properly be described as gold carrying some quartz. So rich was it on the surface that miners made good wages by washing the dirt for several yards below the vein. The richest of the ore was pounded up in a mortar and washed like coarse gravel.

The leading mine in the camp is the Texas, which has been a famous producer from the grass roots, and has up to date proven a wonder. The mine lay immediately across the trail leading to Silver City, and had been crossed and recrossed by miners and prospectors thousands of times in the past twenty years, but it remained to be discovered by a rancher, who at the time could hardly distinguish the difference between a piece of mineral and a charcoal deposit. But, he was suspicious, and as subsequent investigation proved, his suspicion was well grounded. This, then, in common with many other noted discoveries, bears out the adage usually attributed to tender feet, and in this instance the wonderful Texas mine was the result. The mine until quite recently has been worked spasmodically by the crudest kind of machinery, yet under that system it has paid the various parties engaged in working it handsome returns. Under its present efficient management, and by the use of the latest improved machinery, it still maintains the lead, and has proven a source of profit to its present owners. The shaft has attained a depth of 400 feet, and the bottom shows up good ore and a strong vein. The first carload of machinery for the new mill has arrived and is being put into place rapidly. The mill will have a capacity of 40 tons daily. The ore is mostly a heavy silver sulphide, freely showing native, and carries gold in paying quantities.

Lone Mountain.—In the central mining district, has in past years produced large quantities of high-grade silver ore, and, at the present prices of silver, continues to be a payer. The properties are only being operated in a small way at present, but occasionally surprisingly rich pockets of ore are encountered. Only a few mines are being worked now, but should silver ever become rehabilitated or ever reach 90 cents, they could be extensively and profitably worked on a large scale.

Carlisle.—But little has been done for the past two years in this once famous gold camp, but there are signs of its rejuvenation. The extensive milling plant of the old company, once the finest in the Territory, has been allowed to be scattered, many of the more valuable parts of the machinery having been disposed of during the different manage-

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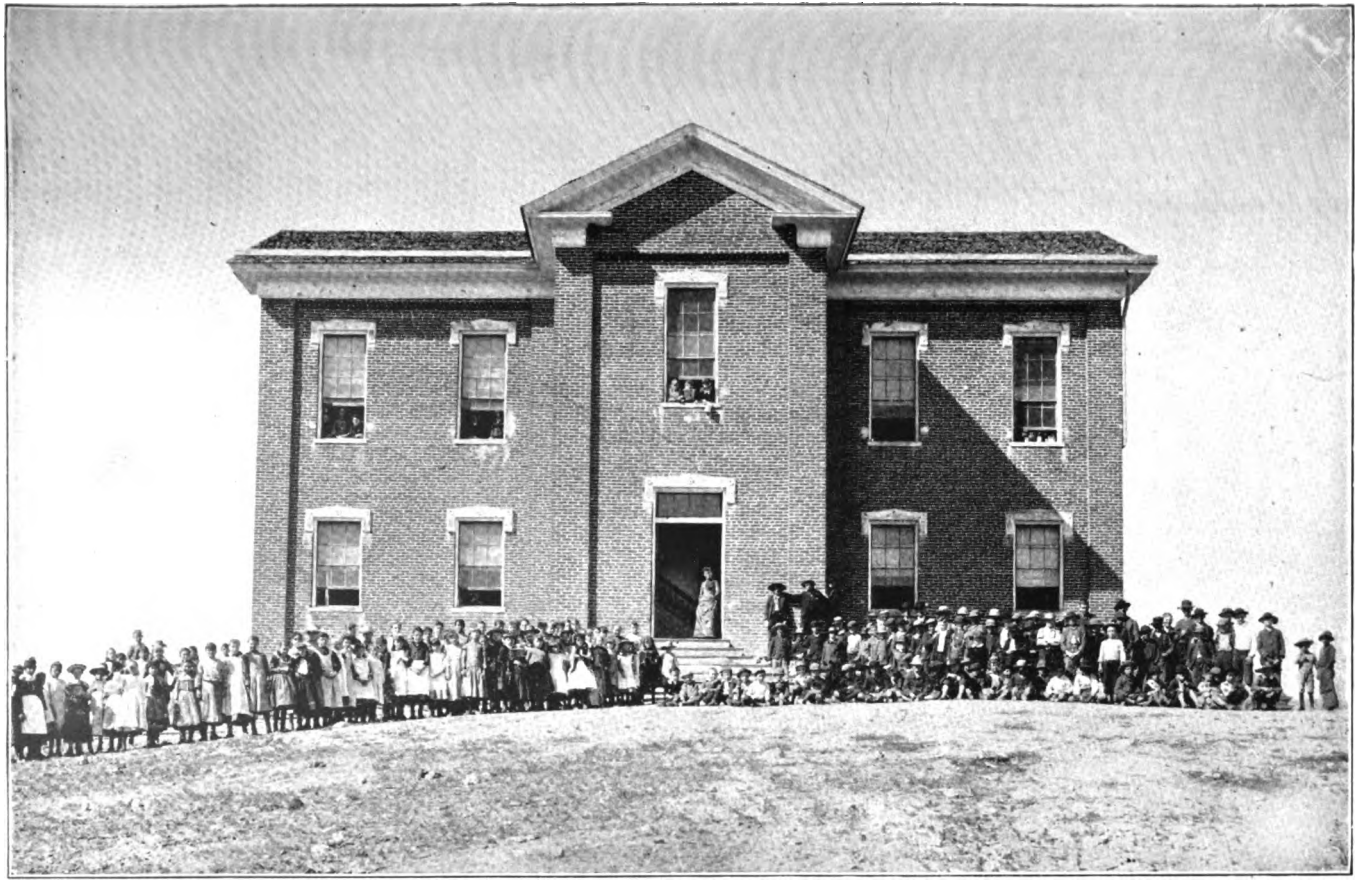

SILVER CITY PUBLIC SCHOOL.

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ments. When the workings had attained a depth of 550 feet, and water had been encountered in great quantities, the ore was found to be exceedingly refractory, and various schemes were devised to work the mine successfully, but all of no avail, and the company, becoming disheartened, abandoned the property almost entirely. There are those, however, miners who worked on the claim from first to last, who insist on declaring that the mine is all right and will again make its mark as a producer. Numerous other properties, all more or less noted, are to be found in the camp, and the owners, with true Western grit, propose to stay with them until the millennium arrives or old Carlisle is resurrected from oblivion.

Gold Hill.—Never since the discovery of the camp in 1884 has there been so little activity displayed as within the past year. The mines are as good as ever, if not better, as greater depth is reached, and the claim owners are as sanguine of wealth to-day as they were fourteen years ago. For some unaccountable reason the camp appears to be undergoing a sort of Rip Van Winkle experience which, apparently, it is difficult to shake off.

Turquoise.—Fourteen miles west of Silver City, on the east slope of the Mangas Valley, are situated, in the foothills of the Burro Mountains, the turquoise mines of Grant County.

The many small mountain ranges are cut deeply by water, forming many canyons. These ridges were originally formed by granite, the same being composed of quartz, feldspar, and mica.

To-day the rock forming these hills would not be called granite, the mica having disappeared and the feldspar decomposed into kaolin. In this rock occur several zones which contain the turquoise. They are of different width, the size above forming a layer of from 12 to 30 feet in thickness. This soil is unquestionably the result of decomposition of organic matter, which furnished the phosphoric acid, the principal constituent of turquoise, and this acid penetrated into the underlying rock, filling the cavities made by kaolin, and producing turquoise.

The zones or veins containing turquoise have different width, strike, and dip, and there is not a shadow of regularity about it, as it takes constant prospecting and observation to find the proper layers, especially the more valuable ones, as turquoise is valued according to color and hardness. Since times unknown dumps have existed in these gulches and were known to old prospectors, but no one paid any attention to them, as no ores were seen near by and turquoise was unknown.

In one canyon is an old tunnel and dump containing earthenware, showing conclusively that people long ago must have mined for turquoise here.

In 1890 the present Azure Mining Company obtained title to many claims around these hills, and has mined since then steadily without interruption. The result of their enterprise is unknown, as the company does not give out any statements regarding finances. It is supposed, however, that the mines pay a fair profit, as the management has never stopped a day in the last eight years.

The mines have been very intelligently opened and worked by the present manager, who takes great pride in having everything in the best possible shape, and even has beautified the grounds by a park in that desolate country. Around the groups belonging to the company a great number of claims have been located, and probably in the course of time these claimants may have as good property as the company.

There are other turquoise properties in the Little Hatchet Mountains, near the camp of Hachita, which a few years ago were profita-

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worked, but at the present writing reliable data is not obtainable. It is known for a fact, however, that stones to the value of $20,0000 have been extracted and that valuable stones are frequently encountered, but their extent is not generally known to the world at large.

LIVE STOCK.

The cattle interests of Grant County are by no means an insignificant feature of wealth, amounting as they do to a considerable sum of money yearly to the thrifty stock grower. Grant County is by far in the lead of any other section of the Territory in this important industry. The shipments for a number of years past have been unusually heavy, that of 1897 aggregating in round numbers $750,000 in value. Silver City is the largest shipping point for cattle in southern New Mexico, and during the busy season the festive cow puncher is a familiar sight upon the streets. The stock yards south of the city are large, easy of access, and supplied with all the modern conveniences. Stock from all the northern and western sections of the county ship from here, as also frequent shipments from southern Socorro County. The Santa Fe system pays special attention to this large and lucrative branch of their business. The recent rise in the prices for beef cattle, incidental to the Hispano-American war, has proven an incentive to stock growers, and they are consequently giving the subject of better beef their strictest attention. The stock cattle of this immediate vicinity are of a high grade, and the profits are accordingly great. The shipments up to date this year have been enormous, and should the demand keep pace with the supply the year 1898 will far exceed any previous record. Prices have been the very best, ranging from $18 to $20, and $22 for yearlings, twos and threes. The ranges, both mountain and valley, are exceptionally good this year, as rains have been abundant and cattle had fared well during the winter last past. Sheep and goats, of which there are quite a number in this county, have proven remunerative to their owners as food producers, while the wool and cashmere fleeces have been disposed of at fancy figures. The stockmen of this section all wear smiling countenances, and some of them, diamonds. Their bank rolls have increased amazingly during the past six months, and fall sales promise to greatly add to their already plethoric purses. Cattle passed through the winter well, and the calf crop this year is better than it has been for the past ten years. The outlook is decidedly encouraging, and the stockmen accordingly in happy spirits.

Hog raising has hardly as yet become a distinctive industry, although there are several small concerns in operation in the Burro Mountains, where mast is plentiful. A few farmers along the Middle Gila who raise corn extensively, and who have no immediate market for their crops, put it into pork, which readily brings 5 and 6 cents per pound in Silver City.

There are a few extensive horse farms in the county, but they are mostly conducted in connection with the cattle ranches, as riding ponies are a prime necessity to the cowman, and are constantly in demand to replace worn out and aged stock.

HOT SPRINGS.

There are a number of mineral springs in the county, some of which have proven to possess remarkable medicinal qualities. The celebrated Hudson Hot Spring, located about midway between Silver City and Deming, on the line of the Atchison, Topeka and Santa Fe Railroad,

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has already achieved a wide reputation as a health and pleasure resort. The temperature of the water registers 142° F., and is almost a sure cure for rheumatism, blood and kidney diseases, and various other complaints.

The hotel accommodations are of a superior quality, and during the summer months no more delightful pleasure resort can be found in the country.

The Gila Hot Springs, 50 miles north of Silver City, are much sought for their medicinal qualities, but the accommodations are not as good as they might be. Camping, hunting, and fishing parties to the higher Mogollon country frequently make this a stopping place, and the ladies of the party enjoy themselves here while the men folks go up into the mountains after large game, which can be found in abundance.

AGRICULTURE.

The agricultural resources of Grant County are but little developed, and yet the area under cultivation would supply an abundance of food products for the inhabitants of the county if properly managed and cared for. The principal agricultural section of the county at present is on the Mimbres River, a small stream situated in the eastern portion of the county. There are now about 20,000 acres under cultivation upon this stream, which furnishes the water for irrigation. It is proposed to build a system of storage reservoirs which will store sufficient water to irrigate 100,000 acres of the choicest land in the West, which lie just below the site chosen for the main dam. The company is composed of Chicago capitalists, and is known as the Rio Mimbres Dam and Irrigation Company, with C. L. Wuelff as resident manager. The company now has a lesser experimental irrigation system at work and has 1,000 acres of land under cultivation. Here there is found the first producing canaigre farm in the United States. The cultivation of this crop is bound to soon prove a profitable and extensive industry, as it has been fully demonstrated that the valley of the Mimbres produces canaigre of superior quality to that grown in any other part of the world. The poorest of the many samples analyzed for the Rio Mimbres Dam and Irrigation Company gave returns of 30 per cent of tannic properties, while the canaigre tubers grown in other localities give 11 to 25 per cent of tannic values. This company has 200 acres in canaigre. A contract has been made with the California Canaigre and Extract Company, an English company, for the sale of the entire product at $6 per ton for the green tubers, the purchasers to dig, dry, and sack the product, the farmer to furnish teams for plowing up the tubers and to transport them to the railroad when dried, ready for shipment. As the canaigre tuber at two year's growth produces 12 tons per acre, it is plain that a canaigre crop is a very valuable one, and is obtained with less labor than is generally expended on other crops which give anything near as good cash returns.

There are thousands of acres of orchards upon the Mimbres producing fruit of superior quality, the peaches and apples competing successfully with those raised in the States, as in fact many carloads of apples especially have been shipped to the East and to Arizona. Fruit grown in the foothills of the Mimbres Mountains may have equals elsewhere, but superior it would be difficult to encounter. Of the smaller fruits and berries an abundance is raised, so much so that the home market is continually glutted. A fortune awaits the happy man who, having the means, has the business foresight to erect a canning plant in that neighborhood.

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On the Gila River, to the north and west of Silver City, there are about 5,000 acres under cultivation, one-fifth of which is operated by the Gila Farm Company, which, besides raising all of everything required for home consumption, produces all kinds of fruits of the finest grades obtainable anywhere. A small apiary on this farm produces 10 tons of honey annually. With storage reservoirs and dam properly constructed the area of tillable land along the Gila could be increased to 50,000 acres.

GUADALOUPE COUNTY.

Guadaloupe County, the banner grazing county of the Territory, with hundreds of thousands of acres of land of the very finest for settlement, offers unexcelled opportunities to the home seeker. Almost the whole eastern part of this county, embracing part of the so-called Staked Plains, is covered with the finest of grama grass. Water is found here within a few feet of the surface, and it needs only the master hand of man to create a veritable paradise.

As a sheep country Guadaloupe County is in the lead of all. The finest improved Merino herds are found here, and the wool produced is without doubt the best in quality and strength of staple. Next to the sheep industry comes that of the cattle, both of which are successfully carried on here.

The agricultural crops of Guadaloupe County are alfalfa, fruit, and cereals. Apples and pears raised here excel in flavor and size similar fruit raised in California.

As yet little efforts have been made to develop irrigation enterprises. In this direction most excellent opportunities are offered, especially at Fort Sumner, where 12,000 acres of land could be irrigated at nominal cost.

Puerto de Luna is the county seat of Guadaloupe County; has a $20,000 court-house, four good stores, and other modern buildings. The elevation is 4,000 feet; the situation is in an extremely picturesque valley on the Pecos River; the climate is mild and delightful in the winter as well as in the summer.

The mineral land found embraces gold, silver, copper, coal, and iron. The coal found is of good quality.

Oats, potatoes, barley, and timothy are chiefly grown, and the ranch houses for live-stock raising are numerous. This locality of New Mexico is especially adapted to the raising of horses.

As a health resort this locality has become famous. The scenic effects are grand. The country is wild and broken, and much game abounds, including bear and deer, while the streams are literally alive with the finest mountain trout, running as high as 5 pounds in weight.

Splendid pine forests cover the mountains and mesas, and the timber industry is an important one.

LINCOLN COUNTY.

The following data was furnished by Mr. G. W. Pritchard:

Lincoln County extends from a point north of the base line of the Territory south to the State of Texas. The county is one of the large counties of the Territory, and within its boundaries it contains both mountains and prairies. The most prominent ranges are the White Mountains, El Capitan Mountains, White Oak Mountains, the Jicarilla Mountains, and a portion of the Sacramento Mountains. There is a population of about 10,000 in this county, devoted to horticultural, agricultural, pastoral,

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and mining interests. The mountainous section of the county, with one or two exceptions is well watered. In the White Mountain range there are a number of perpetual streams that flow the year through, and upon which are many prosperous farms. The Rui Doso, the Tularosa, the Bonito, and the Hondo are a few of the streams that flow from this range of mountains. The mountains themselves are among the highest in the Territory, and, besides furnishing many streams of water, are well timbered. It is within this range that the Mescalero-Apache Reservation is located, and on the Rio Bonito, among the foothills of the White Mountain range, is also located Fort Stanton, where the Government for many years kept its troops quartered. Here is one of the prettiest sights in the whole Territory. An effort has been recently made in Congress to pass this fort and improvements to a society of physicians to be converted into a sanatorium. The locality is recommended for invalids, and especially for those who are suffering from pulmonary troubles, as being a place well adapted to the promotion of health.

El Capitan range is also splendidly watered and timbered. It is at the foot of this range, on the north side, that the El Capitan Land and Cattle Company is located and where it is said they have about 40,000 head of cattle.

The Sacramento range, a large portion of which lies in the county of Donna Ana, is also a magnificently timbered and watered country. Several fine streams flow from this range, both to the east and to the west; those flowing to the east emptying into the Pecos and those flowing to the west sinking into the sands of the plains. It is into this range of mountains, from the west side, that the El Paso and Northeastern Railway Company has recently constructed a branch road. The Penasco country, leading from this range to the east, is a fine agricultural country. Along the streams of this section are many prosperous farmers.

FARMING.

The principal streams upon which farming is carried on are the Rui Doso, Tularosa, Bonito, and Hondo. Fine crops are produced upon these streams every year. There is probably no country that produces a better class of fruit, especially apples and the hardier fruits, than these valleys. The fruits of the Coe Brothers, on the Rui Doso, are noted far and wide for their flavor and quality, and the time is not far distant when Lincoln County will be noted for the excellent quality of peaches and apples, as well as other fruits it can produce.

PASTORAL.

The prairies that sweep down from these mountain ranges, embracing thousands upon thousands of acres of land, are covered with the finest grasses in the world. The grama grass is conceded by stockmen to be the most nutritious grass that grows upon the prairies. Lincoln County has no equal in the Territory in respect to this kind of grass. The country at this season of the year is covered with it, and stock of all kinds are rolling in fat. This county is a stockman's paradise, and the stock raiser here is in a most prosperous condition. Sheep have more than doubled their value to their owners since the passage of the Dingley tariff law, and the same may be said of the owners of cattle in this county. The ranges are not overstocked, as they are in some localities, and, as a consequence, live stock are generally in a good condition the year through.

MINES.

But, after all, perhaps the most important interest in this county is the mining industry. The reputation of Lincoln County for rich mines is not confined to the Territory. It abounds in rich coal fields and in gold, silver, and copper; but the prevailing precious metal is gold. The White Mountains, El Capitan Mountains, the White Oaks Mountains, the Jicarilla Mountains, and the Gallinas range are one vast field of developed and undeveloped mineral wealth. Probably the most wonderful mineral deposit of gold ore in the Territory is to be found in the Hopeful mine, on the Rio Bonito, in the White Mountains. Here is an ore shoot that takes in a large portion of the side of a mountain. The extent of the ore is so great, that in mining it the rock is quarried rather than removed by the ordinary methods of mining. It is free-milling, and although the rock is not high-grade ore, yet its volume is so great that as a mining proposition it is considered one of the big properties of the county. Then, in the same range of mountains, there are the American, Helen Rae, and other mines near the town of Nogal that have developed into rich mines. Seventeen miles north of these mines is the famous gold-mining camp of White Oaks. Who has not heard of the Old Abe mine, of the North and South Homestake mines, the Little Mac, and other mines at White Oaks, the great bullion pro-

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ducers? Millions have been produced by these mines, and yet the camp has only made a beginning. The coming of the railroad will make another Cripple Creek, as an ore producer, of the White Oaks country. North of White Oaks 10 miles are the famous Jicarilla gold placers. There are no placer fields in New Mexico so rich as they. A country from 10 to 15 square miles is a field of gold; that is to say, the whole of this Territory contains rich placer dirt, and notwithstanding the fact that there is no running water in that vicinity, and that mining is done with dry washers and by hauling water a long distance, immense wealth is taken from this locality every year. One of the new enterprises of Lincoln County, now being matured, involves the piping of water from El Capitan Mountains, already referred to, a distance of 22 miles, to these placers. When that is accomplished, it will mark a new era in placer mining in Lincoln County, for it is certain that millions of dollars in placer gold will be taken from these diggings when water is placed upon the grounds.

Lincoln County offers great inducements in all lines of industries, of which it has so many. The coming of a new railroad; the opening of so many valuable mines; the discovery of such vast coal fields, containing the best quality of coal, and the revival of the live-stock industry insure for Lincoln County a prosperous future.

MORA COUNTY.

The county of Mora, bounded on the east by Union County, on the north by Colfax, on the south by San Miguel, and on the west by Rio Arriba and Taos counties, has an area of over 2,000 square miles, consisting of well-watered and as fertile and productive agricultural and horticultural, as well-grassed pastoral, as rich mineral, and as densely wooded timber lands as can be found in any other locality in the great Southwest.

A choice of remunerative occupation is offered to either the farmer, gardener, or stockman; or, should the home seeker prefer to prospect for mineral or be a lumberman, he can find among the mountain ranges of the western portion of the county, on Government land, free and open to all comers, sufficient inducement for that necessary labor which accumulates wealth in bringing to light the hidden treasures of the hills or in felling the giants of the forest.

The eastern portion of this county, all public domain, is entirely devoted to stock raising. The great plains lying between Union County and Red River support numerous herds of sheep, aggregating hundreds of thousands, during all the year. This immense stock range is well watered, and, with sufficient shelter afforded by the many brakes and canyons, comes near to being the stockman's ideal of what a summer and winter range should be. The grass is black grama, well known to be the most nutritious of all grasses.

From Red River westward the country is broken by cedar-clad hills and open parks and glades; is dotted with picturesque stock ranches and small farms until the lower valley of the Mora River is reached at Cherry Valley, from which point to the head waters of that river large tracts of land are farmed, and all under irrigation systems, yielding heavy crops of alfalfa, the principal forage plant grown. Other crops successfully raised are meadow hay, oats, wheat, corn, and in fact all small grains give a greater return per acre in bushels, and many more pounds to the bushel, than any of the famous wheat or corn States.

From Watrous to the western boundary line of Mora County, on all the streams and throughout all the many beautiful valleys, very large amounts of grain and hay are annually harvested. Las Vegas, in San Miguel County, is as yet, and has been for decades, the principal market and distributing point for all crops raised in the upper Mora and tributary valleys, as well as the receiving and distributing point for all material timbers used by the Atchison, Topeka and Santa Fe Railway, and sent for hundreds of miles, north and south, over its line.

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The town of Mora is the county seat, and is situated in the midst of extensive valleys, thickly populated with prosperous and industrious inhabitants, the visible evidence of whose labor contributes in a marked degree to the prosperity of the community at large, and with the remarkable result that not less than 40,000 wagon loads of products of the farm and forest, and of merchandise, agricultural implements, etc., are exported and imported annually.

As yet railroad communication between Mora and the outside world is lacking, but recently there has been incorporated the Las Vegas, Mora and Taos Railway Company, with principal office at Las Vegas, which intends to link those towns named in its title and bring them into close connection by means of a standard-gauge electric railway, thus giving to Mora all the advantages of being practically on a transcontinental line, through Las Vegas, on the Atchison, Topeka and Santa Fe Railway as a gateway. The early construction of this line is almost an assured fact.

The opportunities for investment in Mora County are unsurpassed in the Rocky Mountain regions. To either the large or small capitalist, the millionaire or the "man with the hoe," there are presented openings for the safe employment of money which will in manifold manner repay all judicious outlays.

With the construction of the proposed railway will immediately follow the installation of immense beet-sugar refineries, canning establishments, flour and oatmeal mills, saw and planing mills, and various other important industries, raw material for which will come from the surrounding country. One item alone, i. e., peas, will furnish to a cannery over 1,000,000 pounds per annum, equal to as many cans as pounds, and of as fine a quality and delicious a flavor as any imported French peas. The Mora pea can be bought for 1 cent per pound, and it requires but little arithmetical effort to figure between the cost and profit on an article at 1 cent per pound for raw material and 25 to 30 cents per can for the merchantable product. Beans in great quantities are also grown in all the valleys of western Mora County, and they will assuredly prove an additional industry to that of canning peas, especially as the New Mexico market is now clamoring for both of them. A very heavy export business can be transacted, and both canned peas and beans will readily sell in all eastern cities.

The La Cueva Ranch Company has successfully proven the entire suitability of the Mora Valley soil for sugar beets, and last year (1897) planted a small tract which produced the astonishing tonnage of 22 tons per acre, which on analyses made by the chief chemist at the Territorial agricultural station at Mesilla Park, N. Mex., and by the chief chemist of the Agricultural Department, at Washington, D. C., showed, respectively, 19.7 per cent and 19.4 per cent of saccharine matter per ton of beets. The La Cueva Ranch Company has a standing offer to supply the crop off not less than 3,000 acres of beets for a first-class refinery located anywhere in the immediate vicinity of the ranch, which would be two-thirds the tonnage required by a 100,000-ton plant. The tonnage lacking for such an establishment can easily be furnished in close proximity, and an exceptional opportunity is hereby opened to large capital to come and invest.

The amount of oats annually raised in the upper Mora Valley alone often exceeds 10,000,000 pounds, while of wheat 2,000,000 pounds is regarded as only a moderate yield. The following figures are taken

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from the books of merchants at Mora, and set forth the exports and imports of that town only, for last year:

Wheat	pounds	2,500,000
Oats	do	8,000,000
Corn	do	500,000
Hay	do	2,000,000
Alfalfa	do	1,000,000
Sheep	head	100,000
Wool	pounds	500,000
Peas and beans	do	2,000,000
Lumber	square feet	2,000,000
Piles	linear feet	200,000
Railroad ties		200,000
Cattle	head	2,000
Imports of merchandise, agricultural implements, etc	pounds	4,100,000

But in this connection it is only just and right to state that the area of land actually under the plow is but a mere patch compared to the whole area of the county, which statement is necessary to explain what would otherwise appear an extreme paucity of agricultural products. There are at least 500,000 acres of rich lands lying idle and uncultivated, all of which can be put under irrigation systems in the valleys of the Mora, Rio de la Casa, Sapello, Manuelites, Cebolla, Coyote, Rito, Agua Negra rivers, and several minor streams, all of which rivers and streams carry strong heads of never-failing water.

Fruits of all the hardier varieties grow both wild and in orchards in extravagant profusion; they also offer special inducements for the establishment of preserving or canning works.

In minerals the various sorts in constant demand for smelting purposes are abundant. Some of the finest specimens of copper ore ever brought forth from the treasure vaults of the Rocky Mountains are to be obtained in western Mora County. There is also gold-bearing ore, iron, galena, and other sorts awaiting exploitation and intelligent work of the prospector and miner to show their extent.

Coal of a semianthracite character has recently been discovered in apparently inexhaustible measures which are of sufficient thickness and of such excellence as to establish their commercial value beyond all peradventure. When railroad transportation has been provided, Mora County coal will become known all over the West as a strong competitor in "black diamonds" with any other portion of the country.

The population of Mora County is not less than 17,000 souls. Its assessed valuation is about $1,200,000, being probably only one-third of the actual value.

The altitude runs from 6,000 feet above sea level to 10,000 feet, or perhaps a little higher on the mountain peaks.

The climate is similar to the rest of the northern part or plateau land of New Mexico, and surpasses that of any other country on the face of the globe for counteracting and curing all sorts of pulmonary complaints.

The scenery in the mountains is acknowledged to be superior to the Swiss Alps by those people who have seen both.

The hunter's paradise and the fisherman's ideal for trout fishing is here to be found; the many mountain streams abound in speckled beauties, while game, both feathered and furred, small and large, roams the hills on all sides.

The home seeker can purchase lands already under cultivation for $20 per acre and upward. Farming pays when such lands will readily and constantly yield 50 bushels, or 3,000 pounds, of wheat per acre, which is now selling on the ground at 1½ cents per pound, and never

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less than 1 cent, with a surety of no failures in crop on account of irrigation.

Many other farm products are raised in this county, and of late years potatoes have been most successfully grown; so much so as to enter into active competition with both California and Greeley, Colo., bulbs in the home markets.

Vegetables of almost every known variety are grown throughout all the valleys and on all the farms in Mora County. Cabbages of 40 to 50 pounds weight, as solid and sound as can be imagined, are common results of the gardener's toil. The soil seems peculiarly well adapted to onions, carrots, parsnips, turnips, radishes, lettuces, and garden truck of all sorts attains speedy maturity, taking the place of and driving out of local markets all importations of vegetables from better known parts of the West, on account of the superior flavor of the home-raised article. Celery flourishes in this county; large quantities can be raised for export in addition to meeting local demand.

In natural but as yet undeveloped resources, Mora County can produce a great and varied abundance. Excellent clay for brickmaking, red and white sandstone, limestone, products of the forest, white pine, red and white spruce, cedar of sufficient growth for electric, telegraph, and telephone poles, and many other trees of commercial value all grow in great quantity and of remarkable thriftiness.

There is enough timber in western Mora County to build a railroad round the earth; enough white spruce to supply a very extensive paper mill, or several of them, with raw material for years to come. There is coal in endless amount for fuel for manufactories, canneries, beet sugar refineries, etc., and raw product sufficient to supply their demands and keep them steadily in operation from the very moment they are ready to commence.

Excellent natural wagon roads, kept in good repair, cover the county with a regular network. All means of travel and transportation is now maintained by vehicles only, except where the Atchison, Topeka and Santa Fe Railway cuts across the county from Wagon Mound to Watrous, some 40 miles of line.

There is no county in New Mexico which presents so diversified a field for the safer employment of capital in large or small sums than Mora does. Good management, abundantly aided by fertile soil, permanent water for irrigation, and intelligent farming, will produce almost incredible results; the land requires no artificial fertilizer, as the water used in irrigating attends to renewing the soil every year, or just as often as irrigation is given the lands and crop.

To first realize and afterwards appreciate what Mora County can show and offer to the world, personal inspection and investigation are absolutely necessary, as its most fruitful portions and choicest locations lie remote from the present railway and are not seen or even heard of outside their immediate environs.

RIO ARRIBA COUNTY.

Rio Arriba County lies between the counties of Santa Fe, Taos, San Juan, and Bernalillo, and is bounded by the State of Colorado on the north. Its area is about 4,500,000 acres, of which over 2,000,000 acres are available for farming and pasturing purposes, agriculture and stock raising being the occupation of seven-tenths of the population, which, according to the last official census, is 11,534, although a recent estimate places it at 18,500.

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EDUCATION.

The county of Rio Arriba has as many, if not more, public schools than any other county in New Mexico, and all are well conducted and largely attended. There are 43 school districts with an enrollment of over 1,201, and an average attendance of 623 males and 400 females.

The principal towns of this county are Tierra Amarilla, the county seat, with a population of about 2,000, a good court-house, modern-built jail, three good stores, and a branch of the Denver and Rio Grande Railroad. The other principal towns, which are all thriving, are El Rito, Chama, and Monero, the last being a coal-mining town.

Irrigation is practiced wholly, there being no less than 40,000 acres of land under ditch.

There are two very extensive and exceedingly fertile valleys, the Rio Grande Valley and the vast strip of land along the Chama River from its source to its junction with the Rio Grande, 3 miles above Espanola. These are the fruit regions of this county, and the water for irrigation of the fruit lands is furnished by the Rio Grande and Chama rivers.

MINING.

The mining industry is also carried on very extensively in Rio Arriba County. Rich galena ore has been found, running $40 in silver and 30 per cent in lead, within 8 miles of the Denver and Rio Grande Railroad, which railroad crosses the county of Rio Arriba in its northern part from east to west. Gold has been discovered at Tierra Amarilla in good paying quantities; copper and coal, very rich, have been found in the neighborhood of Abiquiu, in this county. All along the Chama River gold placers in large and paying quantities have been discovered; also on the Chama River near Abiquiu, covering an area of 16,000 acres. There are now three mining districts, i. e., Good Hope, Eureka Gulch, and the Headstone within the county, which are considered by mining experts equal in rich ores to the famous Creede district of Colorado.

VALUATIONS.

The value of property is $856,822. There are 1,550 cattle, valued at $13,002; 127,869 head of sheep, valued at $103,725.85; 1,082 horses, valued at $14,023, and 67 mules, valued at $1,571.

FRUIT.

Fruit of the finest flavor is grown in this county, is free from defect, and is very abundant.

SANTA FE COUNTY.

Santa Fe is one of the smallest counties in the Territory, but by reason of its position on railroads, the size of the towns within its boundaries, and the fact that the city by the same name is the Territorial capital, it occupies the first place of importance among all the counties of the great commonwealth of New Mexico.

Geographically the county is located in the center of the Territory from east to west, with the northern line on the thirty-sixth degree of latitude, and extends south a distance of 72 miles, or somewhat below the thirty-fifth degree. It is 30 miles wide, and has a total area of 1,498,000 acres, of which 975,000 are irrigable, arable, or fit for pasture.

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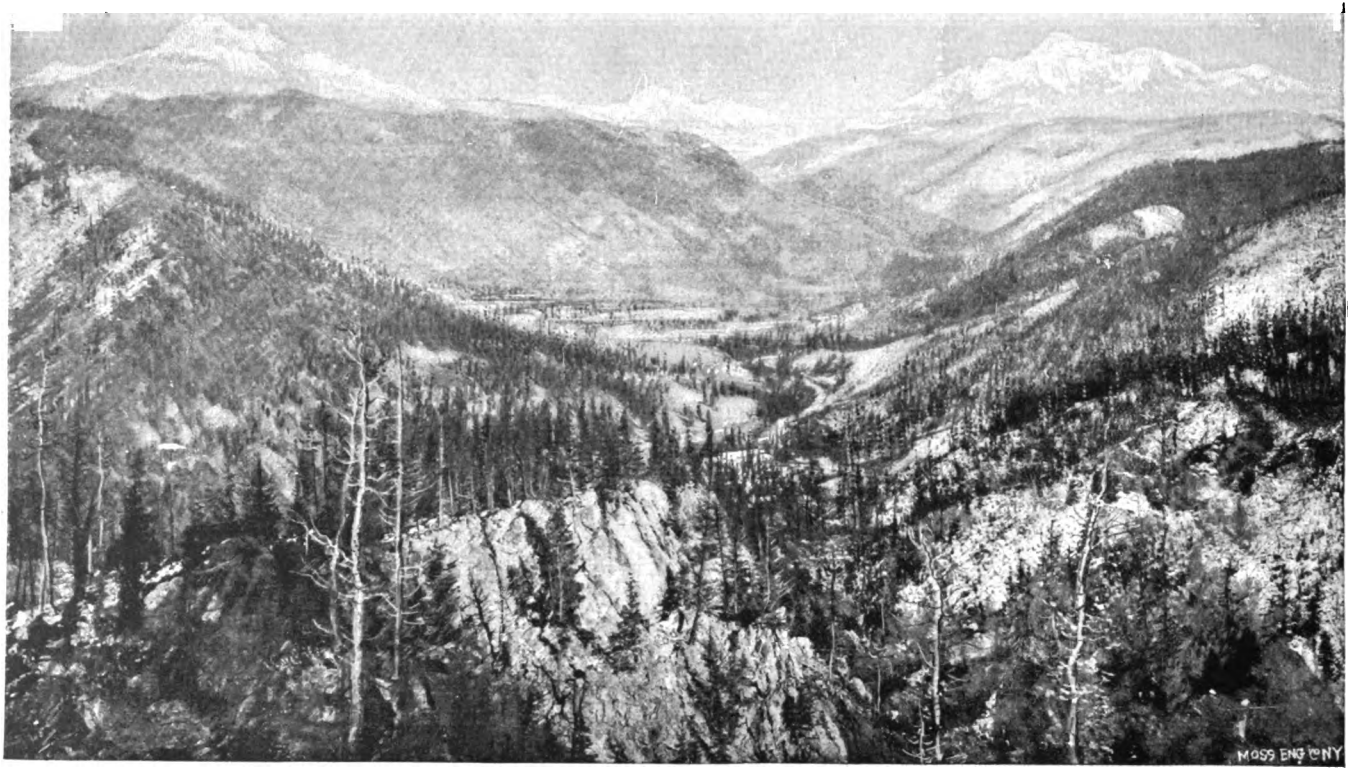

MOUNTAIN SCENE IN NEW MEXICO.

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The Rio Grande River flows through the northwest corner from the northeast to the southwest, and numerous smaller streams, tributaries of the Rio Grande, complete the natural water system. The Atchison, Topeka and Santa Fe Railroad runs through the center of the county east and west, and the Denver and Rio Grande Railroad enters from the north and runs south for a distance of 35 miles, terminating at the city of Santa Fe. These lines of railroad give eastern connections and furnish an outlet for the products of the ranches, orchards, and mines.

TOPOGRAPHY.

The surface of the country is beautifully diversified. Mountains, valleys, and mesas break the contours. On the eastern boundary the main range of the Rockies breaks the winds from the vast prairies to the northeast and exerts a great influence over the climate, rendering the summers cool and the winters mild. To the west the lofty heights of the Jemez and the Valle mountains serve the purpose in fending the valleys from the winds and storms from the northwest. The altitude varies from 5,000 feet in the southern portion of the county to 7,000 feet at the city of Santa Fe. In the valleys the fertility of the soil is wondrous, and when placed under irrigation produces bountiful crops; the mesas provide forage for herds of cattle and sheep; while the mountains are filled with gold and other valuable metals and semi-precious stones.

WATER AND IRRIGATING.

In the northern part of the county the Rio Grande River furnishes a never-failing supply of water to irrigate thousands of acres of valley lands, and a failure of crops is something unheard of. In the Santa Fe Valley the average flow of the Santa Fe River is sufficient to supply every need of a dense population, but on account of the rapid fall of the land flood waters soon run out of the stream and are lost. The one great need of the valley is storage reservoirs in which to catch this waste and reserve it for the dry seasons. One large reservoir has been completed with a capacity sufficient to irrigate not less than 5,000 acres, but there are thousands of acres of valuable lands that are not yet under ditch. A beginning has been made, and the time is not far distant when all the lands suitable for cultivation will be under water. A great stimulus has been given the matter of irrigation the past year by experiments that have been made in the growing of sugar beets, which have met with flattering success.

HORTICULTURE AND AGRICULTURE.

Horticulture has been attended with great success. In the northern part of the county, in what is known as the Espanola Valley, in and around Santa Fe, at Tesuque, and in the different valleys where water can be put on the land, large orchards have been set out and many of them are in bearing. The first attempt to grow fruits was made by the Right Reverend Bishop Lamy sixty years ago, and the results of his efforts in that line are to be seen on every hand. The quality of the fruit raised can not be excelled by even the far-famed products of California, and, wherever shown, Santa Fe County fruits have carried off the prizes against all competitors. The varieties grown with the greatest success are apricots, peaches, pears, apples, nectarines, quinces, and all kinds of berries; nuts of different kinds also do well.

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Grapes are grown to some extent, but on account of the altitude do not attain that perfection which accompanies their culture on lower lands.

Wheat, oats, corn, sugar beets, and vegetables are raised in all the valleys with success. In the Espanola Valley wheat is the principal crop, and the quality of the grain grown is equal to that of any country.

SUGAR BEET EXPERIMENTS.

The success in growing sugar beets in the Pecos Valley the past two years led to the thought that beets might be raised in Santa Fe County, and early in the present year seed was secured and distributed among a number of the farmers in different parts of the county for the purpose of testing the adaptability of the soil and climate to that vegetable. It is now late enough in the season to know the results of the experiments made in this work. Every anticipation has been realized. The beets not only attain the desired size, but the yield is enormous. While no analysis for the per cent of sugar contained has been made, there is no question but it will equal that of the beets grown in the Pecos Valley, which is over 18 per cent.

In the northern part of the county there is, as has already been stated, an unfailing supply of water to irrigate large bodies of land, and that question does not enter into the proposition in the valley along the Rio Grande River. In the Santa Fe Valley water has been provided for 3,000 acres, and the expenditure of a comparatively small amount of money will furnish water for more than double that acreage. It may be of interest to here state what 3,000 acres planted to beets will do toward the upbuilding of a city like Santa Fe, and also to speak of the advantages of the city as a point at which to locate a factory.

The average yield of 3,000 acres of beets, at a modest estimate, is 30,000 tons, worth at the factory, at a fair price, $150,000, mainly representing labor. The city of Santa Fe is so situated that virtually three different crops can be handled by a factory located here. The first, or early-grown beets, grown in the Rio Grande Valley to the south on the Atchison, Topeka and Santa Fe road, could be treated, then a second or later maturing crop from the same valley to the north, on the Denver and Rio Grande road, while the last and latest crop would come from the Santa Fe Valley. This method of raising and shipping beets to a central point would furnish a season's supply sufficient for a factory of more than the average French or German capacity, during a season as long as any California "campaign."

One important feature of beet culture is abundant labor that can be secured just when needed. In that respect the county is placed in an advantageous position. The necessary labor is already here and remains all through the year. Perhaps nowhere else in the Territory can there be found all the necessary conditions combined as at Santa Fe—land, water, sunshine, and labor—for the successful production of sugar beets and sugar made therefrom. All that is lacking is the factory; and from present indications it is safe to predict that within a few years, possibly within the next twelve months, the growing of sugar beets and the manufacture of sugar will constitute the one great source of revenue of the county.

MINERALS AND MINES.

In minerals Santa Fe County is one of the richest sections in the entire Southwest. Gold exists in large quantities in the southern part of the county, in what is known as the Golden and San Pedro district, number of mines are in successful operation. Some of the richest

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turquoise mines in the world are also located in this part of the county, and one New York firm has taken fortunes out of turquoise claims controlled by it. To the east of the city of Cerrillos a few miles are vast deposits of bituminous and anthracite coal, rivaling in quality the product of the eastern mines. This coal is now being mined by the Atchison, Topeka and Santa Fe Railroad Company, and the output supplies the needs of the company and a large market demand. Silver is also found in different localities, but these mines are not working at present, although in years gone by silver mining was one of the principal industries of the county. Lead deposits are found in connection with the silver, and this mineral is beginning to attract considerable attention from miners and mining men.

Developments made in the mines of the county in recent years have resulted in a demand for the treating of ores near the place of output, and several mills for that purpose have been erected, which are running constantly and employ quite a number of men. At this time a smelter and sampling works, with a capacity of 80 tons per day, are in course of construction at Cerrillos, and the works will be ready for active operation in less than sixty days. Other projects in a mining way are either under way or contemplated. The mineral wealth of the county has been known for many years, but it has only been within the past few years that any systematic work has been done, and the development of mining properties will be rapid in the future.

POPULATION.

The census of 1890 gave the county a population of 13,562, but an estimate recently made upon the returns from the last general election, held in 1896, shows a gain of over 7,000, and fixes the number at 21,000.

The principal towns and cities are Santa Fe, Cerrillos, Espanola, Madrid, Lamy, Galisteo, Santa Cruz, Golden, Glorieta, and Dolores.

SETTLEMENT.

The settlement of the county of Santa Fe is so intertwined with the history of the city of Santa Fe that that subject will be treated under the following head:

CITY OF SANTA FE.

Santa Fe, the capital of the Territory of New Mexico and the county seat of Santa Fe County, occupies an unique position among the cities of the United States on account of its age, the many historic dramas and tragedies that have been enacted within its confines, its climate, and location.

POPULATION AND CITY.

At the present time the population numbers about 8,000 people, of which number less than 2,000 are "Americans," the others being lineal descendants of the old Spanish conquerors, but as devoted to their country and as loyal to the Stars and Stripes as the children of the Pilgrim Fathers.

The modern city is one of many peculiarities and presents much that is of interest to the tourist and sight-seer, as well as to those in search of health. The greater number of the streets are narrow and crooked; the low, flat-roofed adobe houses of the sixteenth century elbow elegant modern structures of brick and stone, lending a charm to the old town which casts a spell over all visitors, making them wish the ar

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walls could speak and tell of what they have seen in all the years that have passed since the first Indian stepped upon the plat of ground now forming the plaza. Nowhere else in the United States can there be found so curious a combination of the past and the present as in the "City of the Holy Faith."

LOCATION.

The city is situated almost in the heart of the southern Rocky Mountains, at an elevation of 7,000 feet above sea level. The Atchison, Topeka and Santa Fe Railroad and the Denver and Rio Grande Railroad give communication with the outside world, the former with Chicago direct, 1,320 miles to the northwest; the latter with Denver, 404 miles to the north. These two roads render Santa Fe of easy access from both oceans, and a more delightful place to rest on a long journey can not be imagined.

ATE.

Almost surrounded by lofty ranges of mountains, the valley in which the city stands is sheltered from winds and storms, perhaps as no other place in the land, and the climate can not be excelled. From the records of the United States Weather Bureau in the local office, covering a period of twelve years, it is learned that the average maximum temperature is as follows:

January, 38°; February, 44°; March, 52°; April, 60°; May, 68°; June, 78°; July, 82°; August, 80°; September, 72°; October, 62°; November, 49°; December, 42°. In the winter on the coldest day the thermometer rarely falls to zero, while in the summer the temperature was never known to reach 90°. Extremes of heat and cold are unknown, and the day when the sun does not shine all or part of the time is so rare as to cause comment in the public press. The atmosphere is dry and bracing, and the climate of Santa Fe is known far and wide for its beneficial effects in all cases of pulmonary troubles. In fact, a large part of the residents in the "American Colony" are those who came here to die, as their friends and families thought, but after living a few years in the mountain air have become living, healthy testimonials to the health-giving qualities of the climate.

COMMERCIAL INTERESTS.

Before the day of railroads (the Atchison, Topeka and Santa Fe road reaching the city in 1880) Santa Fe was the principal distributing point for the entire Southwest, and enjoyed a trade that extended over a territory of thousands of miles in area. In those "good, old days" trains of wagons carried merchandise from the Eastern markets along the old Sante Fe trail through the deserts to supply this enormous market, and wholesale houses rivaling many of the pretentious concerns in the large cities to-day, lined the plaza and principal streets. Frontiersmen, cattlemen, hunters, soldiers, Indian warriors, and citizens all congregated in the plaza upon the arrival of a merchandise caravan to hear the gossip of the States, which the mails did not bring, and to welcome returning friends and relatives who had made the perilous journey. With the coming of the Santa Fe road, which passed on to conquer the wild country and deserts to the south and west, these conditions were in a large measure changed. New towns sprang up as if by magic, other marts of trade were established, and the short time in which goods could be secured from the East deprived the city of her commercial

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supremacy. To-day there are large retail establishments doing a considerable volume of business, and several wholesale houses supplying a large scope of country with merchandise, and while former glories have departed never to return, Santa Fe is a place of importance in the business world.

CIVIC SOCIETIES, SCHOOLS, AND CHURCHES.

While the gentlemen of the city can not be classed as "jiners," several secret orders have large memberships. Among the societies represented are: The Masons, Odd Fellows, Knights of Pythias, Woodmen of the World, and several other mutual aid organizations.

REPORT OF THE WOMAN'S BOARD OF TRADE.

The Woman's Board of Trade has very recently passed its sixth anniversary.

The founder of this organization is Mrs. Cora L. Bartlett, wife of the present solicitor-general.

The object of the organization is for advancing every interest pertaining to the welfare and prosperity of the "oldest city in the United States."

This body is regularly incorporated under the laws of the Territory. The standing committees for work are: Finance, library, visiting and relief, intelligence, improvement, industrial house, woman's exchange, prevention of cruelty to animals, reception and education, and we soon will have a cemetery committee, as its plans are now nearly perfected whereby it will have charge of Fairview Cemetery in this city.

The public plaza is entirely under the direction of the Woman's Board of Trade of this city, and the city of Santa Fe appropriates $200 per annum toward its support. A free public library of over 1,000 volumes and a free reading room, furnished with all the leading magazines and papers, are open to the public.

A half or pauper rate is granted this board by both the Atchison, Topeka and Santa Fe and the Denver and Rio Grande Railway companies, and it also owns a pauper burial ground for the benefit of those too poor to purchase lots.

The visiting and relief work is the most important of all its branches, as hundreds are given relief in one way or another every year.

The treasurer's report up to August 4, 1898, shows a balance on hand at that date of $255.30, total receipts $234.60, making a total of $489.90; the expenditures from this amount for salary of librarian, relief work, policeman for plaza, purchase of books, etc., amount to $142.40, leaving a balance of $347.50.

The Woman's Board of Trade prides itself on the businesslike way in which its affairs are conducted, as well as its meetings. Its membership remains about the same (30 members) and unlimited. Every progressive woman in Santa Fe should be a member of this board, granted, of course, she be willing and is so situated that most of her time can be given to work for the public.

Officers for the year 1898 are as follows: President, Mrs. Ida Rivenburg; vice presidents, Belle Gable, Emma Day, and E. J. Bishop; recording secretary, Anita Chapman; corresponding secretary, Mary Bishop; federation, Evaline Crichton; treasurer, Celia Hogle; chairman of State correspondence for G. F. W. C., Mrs. M. J. Warner.

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MILITARY POST AND GOVERNMENT PROPERTY.

From 1846 to 1894 the Government maintained a large military force at Fort Marcy, but in the latter year the troops were removed and the fort, with its commodious buildings and handsome officers' residences, is practically abandoned. Just why the old post was thus deserted by the Government, no one seems to know. A more central point for the quartering of troops is not to be found in the Southwest, and it certainly seems that it would be better to keep the force considered necessary to maintain order in this district at a central point than to have them scattered about the Territory in isolated forts.

On the north end of the military reservation stands the Federal building, a handsome stone building fitted with all of the modern improvements. In this building are located the offices of the Land Department, the internal revenue office, and the offices of the Court of Private Land Claims, with the clerks, interpreters, translators, and attorneys.

MISCELLANEOUS NOTES.

Santa Fe in many respects is a city of modern ideas and improvements, and a pueblo of the seventeenth century in many others. These glaring contradictions constitute the source of attraction to the many visitors.

A splendid system of waterworks supplies the dwellings and business blocks with water for domestic purposes, and furnishes protection against fire; the streets and buildings are lighted with electricity, and the dwellings erected within the last few years are fitted with the most approved sanitary appliances. However, a walk of only a short distance in any direction from the business part of town will take the sightseer into quarters where the light of the nineteenth century has not yet penetrated.

The newspapers of the city are the Daily New Mexican, the Weekly New Mexican Review, El Nuevo Mexicano, and El Boletín Popular, the two latter being Spanish publications.

EARLY HISTORY.

In 1541, when Coronado passed through the then unexplored country in search of the fabled Seven Cities of Cibola, he found an Indian pueblo or town already established upon the spot where the city of Santa Fe now stands. It was undoubtedly a place of much importance among the tribes who occupied the country at that time, as Coronado estimated the population at 15,000 souls. The many natural advantages of the location early attracted the attention of the Spanish settlers, and about the year 1600, perhaps sooner, it became a permanent Spanish town and the seat of government for that part of New Spain which was ceded to the United States in 1848.

On August 8, 1680, the Pueblo Indians, under the leadership of Popé, a Taos Indian, revolted against the Spanish and began a war of extermination on the invaders. So successful were they in the uprising that on August 21 of the same year the Spaniards were compelled to evacuate the town and retreat to a point near what is now the city of El Paso, Tex. So soon as the Spanish were gone Santa Fe was partially destroyed by fire. The churches and monastery were burned save the adobe walls, the official documents furnished fuel for a huge bonfire in the plaza, and as far as possible all evidences of the Christian religion were wiped out.

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Santa Fe, and in fact the whole land, remained in possession of the Indians until September 13, 1692, when Don Diego de Vargas Zapata Lujan, at the head of 80 mounted Spaniards and 100 friendly Indians, after a battle of eleven hours, defeated the Pueblos and regained possession. After that memorable fight the Spanish maintained their supremacy in New Mexico until August 18, 1846, when Colonel Kearny, at the head of a detachment of United States troops, entered Santa Fe and took possession of it in the name of the United States. It is impossible to here go into details of the history of the city before or after the American occupation, interesting as it is, but in the light of that history no other city in the entire country is so rich in tradition and in historic events as this ancient city of the Spaniards.

PLACES OF INTEREST.

To enumerate all the places of interest in Santa Fe would require entirely too much space for the purposes of this brief sketch, but a few of the most important are:

The Territorial library, containing the ancient Spanish and Mexican archives from 1621 to 1846.

San Miguel Church, built in 1540, partially destroyed in the revolution in 1680, reoccupied in 1692, and completely restored in 1710. This is the oldest church in the United States, and contains many relics of the early days.

The Old House, believed to antedate the Spanish occupation.

The cathedral of San Francisco, behind which is the chancel of the old parish church, with a carved and painted reredos, both curious and interesting, erected by Governor Del Valle and his wife in 1761.

The cathedral museum, containing many Spanish paintings and other objects of interest.

The Territorial historical rooms, full of antiquities of historical interest.

Old Fort Marcy, the commanding situation famous in all the sieges of the city; ruins of the old fort built by Colonel Kearny in 1846.

The garita, on the road to old Fort Marcy, by the west wall of which the leaders of the revolution of 1837 were executed.

The plaza, in the center of the town, around which cluster many memories of the conquest of the land by the hardy Spaniards and of the stirring scenes of more recent days. The soldiers' monument is located in the center of this park.

The church of Our Lady of Guadaloupe, with its large and interesting altarpiece on canvas, containing six pictures of the appearance of the Virgin to Juan Diego, and other paintings; picture painted by Salcido in 1779 on copper, and many other paintings and wood carvings.

Monument to Kit Carson in front of the Federal building.

The Rosario Chapel, erected on the spot where De Vargas made his vow before the surrender of the city in 1692.

The most interesting of all the old buildings is, without doubt, the governor's palace, an adobe structure, built in 1598, and continuously occupied by the Spanish, Mexican, and American governors for three hundred years. The men who have lived and conducted the affairs of state in the old pile included some of the foremost names of the land, not only of the Territory but of the Eastern States.

To quote from the words of ex-Governor Prince, author of the most authentic and complete history of New Mexico extant:

Without disparaging the importance of any of the cherished historical localities of the East, it may be truthfully said that this ancient palace surpasses in

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interest and value any other place or object in the United States. It antedates the settlement of Jamestown by nine years, and that of Plymouth by twenty-two, and has stood during the two hundred and ninety-nine years since its erection not as a cold rock or monument, with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living center of everything of historic importance in the Southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a Territory, this has been his official residence.

From here Oñate started, in 1599, on his adventurous expedition to the eastern plains; here, seven years later, 800 Indians came, from far off Quivirato, to ask aid in their war with the Axtaos; from here, in 1618, Vincente de Salivar set forth to the Moqui country, only to be turned back by rumors of the giants to be encountered; and from here Peñalosa and his brilliant troop started, on the 6th of March, 1662, on their marvelous expedition to the Missouri; in one of the strong rooms the commissary-general of the inquisition was imprisoned a few years later by the same Peñalosa; within its walls, fortified as if for a siege, the bravest of the Spaniards were massed in the revolution of 1680; here, on the 19th day of August of that year, was given the order to execute 47 Pueblo prisoners in the plaza which faces the building; here, but a day later, was the sad war council held which determined on the evacuation of the city; here was the scene of the triumph of the Pueblo chieftains, as they ordered the destruction of the Spanish archives and the church ornaments in one grand conflagration; here De Vargas, on September 14, 1692, after the eleven hours' combat of the preceding day, gave thanks to the Virgin Mary, to whose aid he attributed his triumphant capture of the city; here, more than a century later, on March 3, 1807, Lieutenant Pike was brought before Governor Alencaster as an invader of Spanish soil; here, in 1822, the Mexican standard, with its eagle and cactus, was raised in token that New Mexico was no longer a dependency of Spain; from here, on the 6th day of August, 1837, Governor Perez started to subdue the insurrection in the north, only to return two days later, and to meet his death on the 9th near Agua Fria; here, on the succeeding day, José Gonzales, a Pueblo Indian of Taos, was installed as governor of New Mexico, soon after to be executed by order of Armijo; here, in the principal reception room, on August 12, 1846, Captain Cooke, the American envoy, was received by Governor Armijo, and sent back with a message of defiance; and here, five days later, General Kearny took formal possession of the city, and slept, after his long weary march, on the carpeted earthen floor of the palace.

Coming down to more modern times, it may be added that here General Lew Wallace wrote Ben-Hur, while governor of the Territory in 1879 and 1880.

CAPITOL BUILDING.

A few years ago the beautiful capitol building, located in the south part of the city, was burned, and the Commonwealth has had no official structure except the old palace; but at the present time a new capitol, which will compare favorably with the state houses in most of the States, is in course of construction, and will be ready for occupancy by the time the legislature convenes again.

A LOOK INTO THE FUTURE.

What the future may have in store for the city of Santa Fe only that future will reveal, but it is certainly something bright.

With the unrivaled climate, the fertility of the soil in the immediate vicinity, the orchards that are rapidly multiplying, and a constantly growing population, the outlook is anything but discouraging. The business depression that has held back enterprise and development for the past four or five years has given place to an era of prosperity, which is sweeping over the entire Territory. Mining operations are assuming unusual activity, cattlemen are reaping a harvest, and the experiments that have been made in sugar beet culture are rapidly crystallizing into action looking to the establishment of a large factory here in the near future, and it is certainly within reason to predict a marvelous growth for the city of Santa Fe during the next five years.

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SAN MIGUEL COUNTY.

SIR: In compliance with your request, I give you herewith a somewhat condensed report of San Miguel County:

Our county has an area of nearly 3,500,000 acres, of which it is estimated that about 2,500,000 acres are adapted for grazing and agricultural purposes. The Canadian and Pecos rivers have their principal sources of supply in this county and constitute its drainage channels, and as stated in one of the recent reports of the New Mexico bureau of immigration, much land could be placed under irrigation by the construction of water-storage reservoirs, owing to the county being so well watered by the streams just mentioned and the Gallinas, Sapello, and Tecolete rivers and their tributaries.

The western portion of the county is mountainous, rising from the plains to some of the highest ranges in the Territory, and capped with snow a good portion of each year, which constantly feeds the mountain streams with pure water that passes off into and through the valleys below.

In addition to the many never-failing streams is coupled the fact that our rainfall in this section of the Territory is unusually good; in truth, so good at certain seasons that one is reminded of the weather of the more eastern States.

Our valleys are well adapted for farming and gardening, the soil being fertile and of a good depth.

I am informed by a practical gardener near Las Vegas that the average crop of wheat is between 25 and 30 bushels to the acre, and of oats about 40 bushels per acre.

All kinds of vegetables do exceedingly well and in many instances have a better flavor, owing to our sunshine, than the garden truck of the east.

From all sections of the county I am informed that the crops are in magnificent condition, more especially so in the region of the Sapello and Pecos rivers, the harvest far exceeding that of several years past, and our farmers are simply jubilant over the prospect of a plentiful and fine harvest of all kinds of cereals.

Although fruits are not raised to a very considerable extent in this county, it is well known that orchards along the Pecos River valley, from San Jose down, are in good condition and loaded with fruit, such as apples, pears, and peaches; the crop of the latter is reported as being very good and equally so below the mesas at Canyon Largo and the immediate vicinity.

The crying need of our county to-day is the settlement of the title to the Las Vegas grant, which covers about one-sixth of the county's area (and that, too, immediately surrounding the city of Las Vegas), and a proper encouragement to capital for the building of water-storage reservoirs, which could be given if the grant title were settled.

Our population I would estimate at about 35,000 inhabitants, which might easily be doubled if we were prepared to take advantage, in all respects, of the conditions that nature has given us.

As regards mining in San Miguel County there is nothing new to be said. The Rocky Mountain range which runs across the western end of the county contains a variety of minerals, but whether in paying quantities remains for future prospecting to determine. Plenty of good indications for gold, silver, copper, iron, lead, and coal have been discovered, and it is not at all improbable that with the intelligent expenditure of capital paying mines would result, but nothing has intervened since last year's report that will even justify this county in "reporting progress" from a mining standpoint.

The cattle ranges in San Miguel County have never been in finer condition than at present, but owing to the fact that the southeastern portion of our county was taken from us a few years ago to form Guadalupe County, and the eastern end to make up part of Union County, has naturally resulted in cutting down the number of cattle within our borders, although Las Vegas, our county seat, is growing in importance each year as the cattlemen's headquarters for this part of the Territory, including the counties of Mora, Union, and Guadalupe, and is the point for cattle buyers to visit in their search for owners of desirable herds.

San Miguel County is exceedingly rich in flocks, and a recognized center of the sheep-breeding and woolgrowing industry of New Mexico. In this county, as elsewhere in the Territory, the sheep business is pursued by men who are abundantly provided with the qualities which always command success—intelligence, perseverance, and energy—and to-day they are prosperous, their flocks are increasing in numbers, they have improved the quality and quantity of the wool on the sheeps' backs by judicious and intelligent breeding, and the excellent and delicately flavored mutton from their sheep has created a demand for them that they can only inadequately supply.

The sheepmen of San Miguel County are also fortunate in being in close proximity to an excellent wool market.

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To-day, as for many years past, Las Vegas, the county seat of San Miguel County, is acknowledged to be the best wool market to be found anywhere in the Southwest. The location of three large wool-scouring establishments at Las Vegas has been the principal factor in making the city such a desirable market for the woolgrowers. These plants alone are capable of handling between 7,000,000 and 8,000,000 pounds of grease wool per annum, and their presence and eagerness to secure wool creates an unsurpassed home market, and engenders a competition for the clips shipped here of the keenest and healthiest description, with the result that the growers can obtain more money for their wool here than they can anywhere else.

In the past twelve months the scouring mills at Las Vegas consumed about one-third of the wool clip of New Mexico, and over half of it was handled by the Las Vegas houses.

From the most remote sections of the Territory wool is transported overland and by rail to Las Vegas, attracted by the excellent market, the growers admitting that it pays them to ship to Las Vegas rather than to dispose of their clips at markets nearer home.

In addition to the help derived from the scouring mills, the woolgrowers who do business at this point are also benefited from another source. Here are located immense wholesale and commission houses, who furnish the sheepmen with provisions and other supplies necessary to their business, and who are in the closest touch with the sheep and wool markets of the East at all times, and thoroughly informed in regard to the values of both sheep and wool.

To these houses the growers consign their clips to be sold, and as their interests and those of the sheepmen are mutual, their knowledge of present and prospective conditions enables them to handle the clips to the very best advantage, and to obtain for their customers the highest market prices, which alone they would hardly have been able to secure.

At this point, also, are located resident sheep buyers, who are in the market the year round for sheep, as the scouring mills are for wool. During the summer and fall months, Las Vegas is visited by large numbers of outside buyers and feeders anxious to secure New Mexico sheep for their feeding pens.

Further reference to the advantages gained and benefits derived from scouring mills, as well as descriptions of the classes of sheep bred and wool grown in New Mexico, will, no doubt, be found in the general article on the sheep and wool industry, as I know you consider this subject of such great importance as to justify a prominent place in your report.

There are two establishments in Las Vegas erected for wool-pulling and tanning purposes. The process is an elaborate one, consisting in the treatment of the wool pelts in such a manner as permits the removal of the wool from the pelt, after which the skin, or slat, as it is technically called, is tanned into leather. The skins from New Mexican sheep are well and favorably known in leather circles, Eastern tanners claiming that the leather made from these skins is superior to that produced from any other class of sheep pelts. The establishment of pulling and tanning plants here has given an impetus to the trade in sheepskins, as it provides the longed for desideratum of all producers (let their products belong to the animal, vegetable, or mineral kingdom), a never-ceasing, excellent home market.

Las Vegas is one of the principal cities of the Territory, having a population of about 10,000 inhabitants, and is well and favorably known for its wealth and enterprise, which was practically demonstrated only last month by our citizens raising in a few days over $16,000 for the completion and furnishing of the New Mexico normal school located at Las Vegas.

Of course, it is expected that the Territory will refund this money to our citizens, but by this prompt action the board of regents is enabled to open the school this fall.

This is of great importance to Las Vegas, as arrangements have been made by which the Las Vegas public schools will, as far as practicable, be run in close harmony with the normal—the public high school occupying part of the normal school building—and the grade of our public school system, generally, raised higher than ever before. But no doubt the board of regents of the normal school will touch upon this matter more in detail in their report to you.

The division headquarters of the Atchison, Topeka and Santa Fe Railroad are located at Las Vegas with a monthly pay roll of $30,000. The railroad company is just completing a very fine hotel to be run by Mr. Fred Harvey, so well and favorably known to all the traveling public. This will give Las Vegas one of the finest hotels in the Southwest.

The Las Vegas Hot Springs, 6 miles distant and connected by a branch line of the Santa Fe, is, no doubt, a subject of special mention in your report. The springs themselves are among the most famous on the Western Continent for delightfulness of situation, medicinal qualities, and beautiful surroundings.

The Montezuma Hotel, located at the springs, and also the property of the Santa Fe Railroad, is one of the finest hotels of its class in the United States.

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The mercantile business at Las Vegas is large and profitable in both the wholesale and retail branches.

We have four large wholesale and commission houses that do an annual business ranging from $500,000 to $700,000, besides having a number of smaller houses doing an annual business of from $100,000 down to the small retail dealer. We have three banks, two nationals and one savings, all doing a profitable business, with deposits aggregating $1,000,000, besides a prosperous building and loan association that has done much to aid in the upbuilding of our city. In fact Las Vegas is well supplied with all the conveniences that naturally belong to any American city of our size, except that we continue to run our street cars by mule power instead of electricity, but hope to report a change in this respect within a short time.

The climate of New Mexico will, I know, receive especial mention under its proper heading in your report, but as the northern half of the Territory differs in some respects from the southern half as regards climate, I desire, in conclusion, to say a few words on this subject, more from a local standpoint, from data very kindly furnished me by Dr. F. H. Atkins.

Although the climate of New Mexico is justly famed for its health-giving qualities, the residents of San Miguel County are not to be blamed if they feel, as the result of long experience, that their much-favored county has the cream of all the Territory has to offer. High in its western part, naturally, it has occasionally pretty cold winters, but the colder they are the better the health. In its eastern portion it has greater winter warmth from lower altitude, a condition demanded by many visiting invalids. The climate, high or low, is dry, the rainfall at Las Vegas averaging about 18 inches a year.

The summers in the regions above 5,000 feet are not to be surpassed in America; warm only in the afternoon, and then only 80° to 85° for two or three hours; at night the temperature requires a blanket to sleep under, and even in the daytime the change from the clear, dry sunshine to the shade gives remarkable coolness. Malaria is unknown, as also are those other pests of tourists in the Southwest, fleas and mosquitoes. So, also, violent storms are not familiar in this favored section. The winter precipitation—all as snow—is scarcely more than 1 inch for the three months. The spring and summer dryness are represented by a relative humidity, often as low as .20, the figure for the year being about .45.

At Las Vegas about three hundred and forty days each year are sunshiny and the greatest cloudiness occurs in midsummer during our rainy season when it can be most easily tolerated.

Very respectfully, JOHN W. ZOLLARS.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

SAN JUAN COUNTY.

AZTEC, *August 15, 1898.*

YOUR EXCELLENCY: I inclose a short statement of the principal points of progress made by our county during the last year. I have been delayed and hampered by sickness so that I am afraid that it will not be of much benefit to you—but under the circumstances I have done as well as I could. If I can be of use in any way, always instruct and command me.

Very truly, yours, J. G. KELLO.

The county of San Juan has made large progress in the development of all its various resources during 1897-98.

All crops were large during 1897, but the fruit crop was phenomenally so, fruit trees of all kinds being loaded to the breaking point.

The apple crop was not only large in quantity, but great in quality, size, and perfection of color. One wholesale firm of Chicago alone bought 8,000 boxes of select fruit, which was sold at fancy prices. During the winter one train of 25 cars containing 500,000 pounds of the choicest kinds was shipped from Durango, Colo., east and found immediate sale at the highest prices. One firm of that place alone shipped of San Juan County apples 1,500,000 pounds to Eastern markets.

The shipping records of Durango merchants show that 5,000,000 pounds of apples were shipped by San Juan County farmers into Durango, Colo. This does not include the large amount that was peddled in and about the neighboring mining towns. Besides all this a very large amount of fruit was shipped and sold from Gallup, N. Mex.

It has been estimated that the apple crop of the county would aggregate from 8,000,000 to 10,000,000 pounds. The peach crop was fully as large, but owing to its perishable nature and the lack of near railroad facilities, much of this crop went to waste. Apricots, pears, plums, and prunes were also marketed in large quantities.

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There was also a large increase in the acreage of alfalfa, corn, and wheat, and the product of these was full or above the average. With a surplus of alfalfa and grain our farmers are giving more attention to the feeding of stock cattle and hogs to consume these products instead of hauling them off to distant markets.

The crying need of San Juan County is a railroad south connecting with the Santa Fe system. We are practically now a part of Colorado, as there are our nearest markets.

These average from 35 to 50 miles away, and the farmer puts in nearly half of his time marketing his produce. This leaves him little time for improvements. Yet in spite of all this we doubt if any part of New Mexico has made more improvements than this county during the past year in proportion to their means.

A large bridge has been built at Aztec over the Animas River, and there is now in progress of completion a flouring mill at the same place. The town of Farmington has made good progress in increase of population and has built many good residence structures.

The Fruitland, La Plata, Bloomfield, and Largo districts show improvements in farm buildings and residences which show prosperity and thrift. There has been a slow though steady increase of immigration into this county in the last ten years. This, however, bids fair to be largely increased in the coming year, as a large part of the best farming lands lying on both sides of the Animas River are to be brought under irrigation by large canals projected and begun by the Animas River Land and Irrigation Company. These canals will cover from 80,000 to 100,000 acres of land, all of which is the best in the county for richness and depth of soil, exemption from early and late frosts, and freedom from excess of alkali.

They are ideal lands for fruit and alfalfa culture, and only the expense of constructing ditches on them has kept the original settlers from selecting them in preference to the lower lands. Now, with improved machinery, and capital to construct canals at a comparative low cost, these lands will come under cultivation immediately, as little or no clearing is necessary, but large tracts can be plowed as easily as improved land. The supply of water is inexhaustible and can be furnished at a very low cost.

Already settlers from the east are coming in, and there are abundant reasons to believe that the population of San Juan County will be largely increased within the year.

There has been a marked stimulation of the sheep industry in the last year. Herds have been largely increased and a better class of stock introduced.

We have large bodies of land which are fit for no other purpose than grazing sheep, so that these have been practically waste lands during the years of Democratic prices of wool. Now they are utilized, and add largely to the prosperity and income of the county.

Taken as a whole, the prospects of San Juan County have never been so good for a future of extended progressive prosperity.

Respectfully, J. G. KELLO.

MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

SIERRA COUNTY.

Sierra County is situated in the south central part of the Territory of New Mexico, and has a population of between 6,000 and 7,000. The area of the county is about 2,376 square miles. It lies principally in the Rio Grande watershed, which river traverses its entire length, taking up in its course hundreds of smaller streams and bodies of water, which will serve as an important factor in making agriculture and horticulture the leading industries of this section.

AGRICULTURE.

There are about 5,000 acres in the county of Sierra under cultivation, but it is estimated that over 50,000 acres would bear crops if there were farmers to plant them. The water facilities are of the finest.

Colonies of from ten to twenty families, with small capital, say from $1,000 to $2,000 each, could make excellent locations in this county. The land is cheap and the titles are good, and there is a demand at all times for agricultural products.

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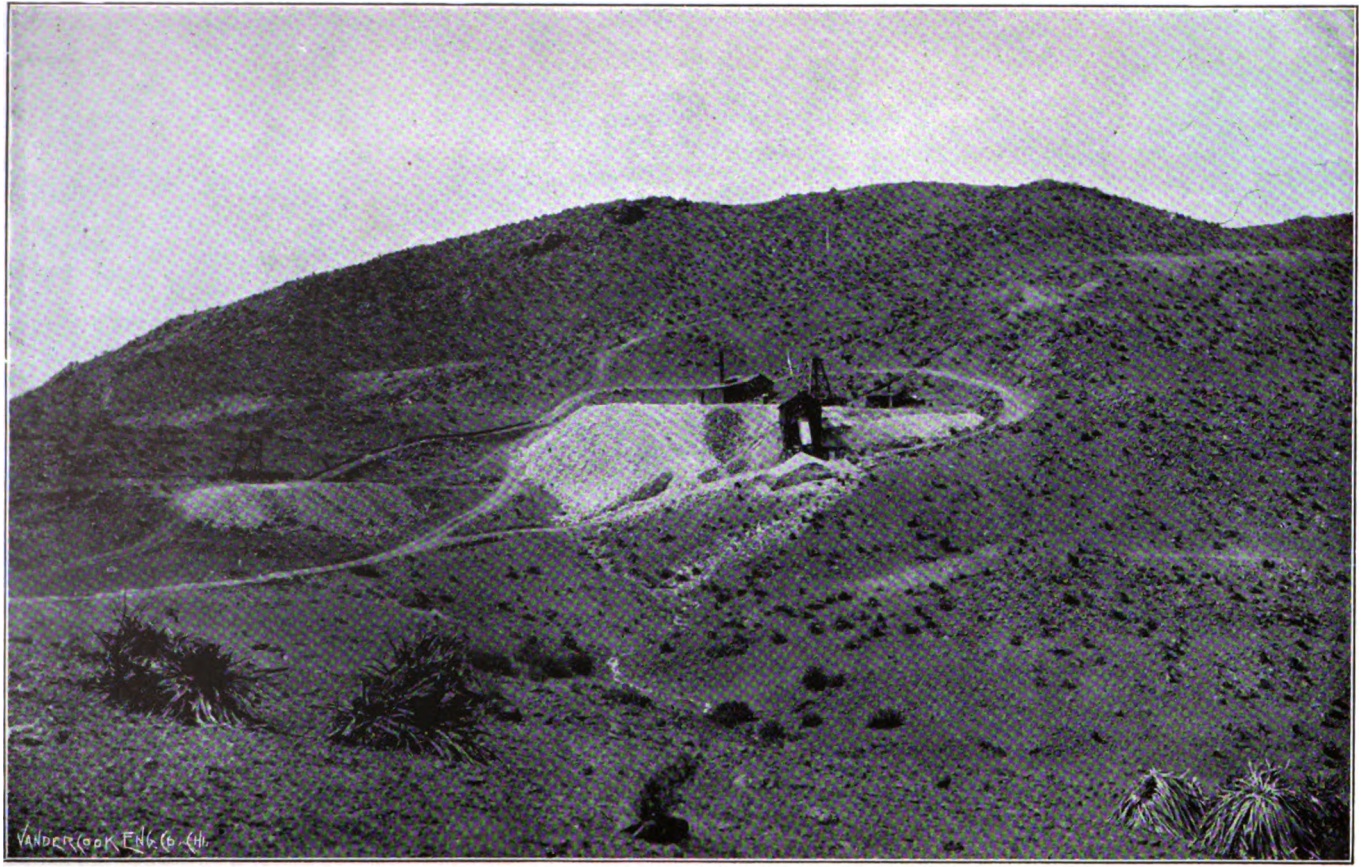

GOLD MINE, SIERRA COUNTY.

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MINING.

Among the mining districts of our Territory the Hillsboro district, near Hillsboro, in the county of Sierra, should be especially mentioned from their past and present yield of gold, and by reason of those features of recent discovery and development which promise enlarged operation and production.

The annual output of gold, silver, and copper obtained from quartz veins and from placers has been something over $350,000 for the past few years, or since the mines have begun to be worked at all scientifically and systematically. Of this yield but a small portion has been taken from the placers, yet the greatest promise of the district lies in these extensive gold fields, and their output was very large for some time after their discovery in 1877. The process of working them was to haul the gravel some 4 or 5 miles to the Percha River, but only the rich gulches and pockets would justify such expense, and now the water must be brought to the ore. Quite recently California experts, after an exhaustive examination of placers, have recommended to their principals an investment of $600,000 in reservoirs and hydraulic work with confident promise of large profits. The ground is easily shown to contain gold in paying quantities.

There are no vexatious laws to hinder placer mining in this Territory, and in any event these placers do not converge upon any agricultural lands. With certain payment in gold of all revenues and profits, it is not likely that these fields will much longer be unworked for want of the capital necessary to raise the water from the stream beds.

The Tripp mine has lately developed a very large and high-grade body of gold ore, and present indications point to it as being the largest find so far in this district. This mine is being worked by Hon. William H. Andrews, of Pennsylvania, and good results will no doubt follow.

The Wicks mine has sunk its shaft from the 200 to the 300 foot level, and has developed a fine body of ore the entire 100 feet, larger and richer than anything above the 200 foot level.

In addition to these two mines, there are many others that have been showing an increased development and production, and the balance of the mines are producing their usual production, and are shipping their regular amounts, which serve to employ many men outside of the prospectors.

CATTLE INTERESTS.

The cattle interests have never been brighter or better, and the grass on account of the abundant rainfall is fine; the cattle men are fast retrieving their lost fortunes, and the herds are increasing with wonderful rapidity.

SOCORRO COUNTY.

The following report was furnished by Mr. W. E. Martin:

Socorro County occupies the central latitudinal portion of New Mexico, and extends westward from Lincoln County to the Arizona line, a distance of 230 miles. It is the largest county in the Territory, and is peculiarly fortunate in the wealth and diversity of its resources. The valley of the Rio Grande extends through its center, and its surpassing fertility is attested by the numerous thriving settlements embraced within its boundaries.

Of these towns the city of Socorro, the county seat, is the largest. Situated at the foot of the Socorro Mountains on land gently sloping toward the river, sheltered from the northwest and southwest winds, with an elevation of 4,665 feet, it has incal-

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earned its reputation as an ideal health resort. Its water system is perfect, and conducts the water, famous for its softness and purity, from the inexhaustible spring at the foot of the mountain to all parts of the city. In 1892 the Court of Private Land Claims granted to the city of Socorro 4 square Spanish leagues of land, centered by the Roman Catholic Church of Socorro, thus assuring perfect title to those acquiring lands within its limits. Without possessing a single individual who might nowadays be termed rich, yet for substantial, well-to-do citizenship Socorro can vie with any city of her size in the Union. Her enterprises are controlled by men of standing and public spirit. Blessed with a generous, hospitable, and elevated society, she stands ready to respond to every progressive step that shall tend to develop the but yet half-awakened resources of the county. With a population of some 5,000, Socorro is past the stage of growth when it is possible to embody in a short report a reference to each of its many enterprises. With her smelters, fire-clay works, natatorium, large mercantile establishments, mills, etc., she has certainly taken material strides toward becoming a large and prosperous city. Of her three flouring mills, the steam mill of John Greenwald & Co. has recently been enlarged and improved, and is turning out flour from the peerless Socorro County wheat, which is equal to the finest products of Eastern mills. Among her recent improvements the splendid distillery of Abe Coon, the great orchardist, deserves mention. This structure is built of brick, and is furnished with the most modern appliances for the manufacture of distilled liquors. Though in operation only a few months the product which Mr. Coon is turning out has achieved a gratifying reputation.

Two large public schools, a Catholic seminary, and that magnificent structure, the celebrated school of mines, which opened this year with a greatly increased attendance, give evidence of the fact that Socorro is not behind in educational advantages.

The happy situation of Socorro from a sanitary standpoint has long been recognized by the medical faculty. Its benefits have been so pronounced that a project is now on foot to establish a large sanitarium above and about 2 miles distant from the town, on land deeded to it by the city.

San Marcial, a thriving railroad town, is the next largest in the county. Magdalena, on the Magdalena branch of the Santa Fe Railroad, is a busy mining town, and the largest stock shipping point in the Territory.

MINING.

Socorro County's mining resources are being rapidly and widely developed. At Water Canyon, 16 miles west of Socorro, the Timber Peak Mining Company, a Philadelphia corporation, have just completed a road some 7 miles long at a cost of nearly $8,000. This leads to their mines on Timber Peak, where they have opened up an immense body of ore for the operation of a modern reduction plant of 150 tons capacity. The mill is in process of erection and will be running this fall. The mines in Water Canyon, Six Mile Canyon, and in the Socorro Mountains are all within 3 to 20 miles of the magnificent smelting plant at Socorro, and the haul to the smelter being down grade, makes it possible to operate mines in those sections containing low-grade ores with success. At Graham, in the western part of the county, the Helen Mining Company is operating, by water power, one of the best-paying mills in the Territory. The utilization of this power cost over $25,000, and its capacity can be judged from the fact that the company are now constructing a bucket tramway from their mines to the mill, and have recently purchased an electric plant which will furnish sufficient power to run all of the mills in the Mogollon mining district.

At Magdalena the graphic smelter, erected about three years ago, has been running successfully on ores from its own and other mines in the Magdalena mining district with but one shut down since its construction. Without going into statistics, it is sufficient to say, as indicating the development of the mining industry in Socorro County, that six mining companies have been incorporated within the past year for the purpose of operating in this county. These companies are controlled by men of capital and experience, and all of them have begun the immediate and extensive development of their properties.

The many perpetual streams flowing through the mineral belts of the county, and the abundance of timber, with the equable winter climate, make it possible to work the mines throughout the entire season at a minimum outlay.

Besides the precious metals, there are many valuable lead and copper properties. Just recently large quantities of lead and copper were discovered a short distance east of Socorro, which are receiving the attention of capitalists.

The Carthage coal mines, 10 miles east of San Antonio, are being steadily operated by A. H. Hilton, of San Antonio. Coal of the best quality is found throughout the county. The smelter at Magdalena is fired with coal mined in that vicinity, and it needs only additional railroad extension to open up valuable coal fields in the county.

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PUBLIC SCHOOL, SOCORRO.

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AGRICULTURE.

The valley of the Rio Grande, from its source to its mouth, is as rich as the valley of the Nile, and all the products which are raised in the most favored sections of the country are here raised in the greatest abundance, and are of the finest quality. At every State and international exposition the grain, fruits, vegetables, and grasses of the Rio Grande have competed with and excelled the finest products of our most favored agricultural States.

In the western part of the county the Frisco, Tularoso, and Gila rivers, with their numerous branches, irrigate valleys of equal fertility to the Rio Grande. Being in a higher altitude, they are of course better adapted to the raising of apples, potatoes, and the hardier products. Their amazing prolificacy can best be realized when it is remembered that their soil is the accumulation for numberless ages of the wash from the mountains, and it is not unusual to go to a depth of 15 or 20 feet before a substratum is reached.

As in other parts of the Territory, and the whole irrigable West, vast areas of land in the county are lying untilled for want of an adequate system of irrigation, especially in the Rio Grande Valley. This land only awaits the introduction of storage reservoirs to repay a hundredfold the outlay therefor.

PREHISTORIC RUINS.

To the archæologist and the savant the valleys of the Frisco and Tularoso present features of the deepest interest. It is here that the remains of the Pueblos of the historyless races who cultivated the valleys in ages past are found. To the health seeker, for whom the rod and gun have no attractions, the delving among the stone ruins for the artistically painted and skillfully made pottery, for shell and turquoise ornaments, and the curious implements of war, agriculture, and the chase of a people who were certainly not strangers to the arts of civilization, affords a healthful and diverting occupation of intense interest to the speculative mind.

STOCK.

During the past year 8,000 cars of cattle have been shipped from Magdalena. Owing to the high price of beef, many of the principal stockmen have entirely cleaned up their ranges of beef cattle, so that the splendid grazing grounds will not be overburdened for several seasons to come. For the past ten years the stockmen have bred to Shorthorn and Hereford bulls, and there is very little, if any, low-grade stock in the county.

Probably no industry in the county has met with such impetus during the past year as that of sheep raising. Many individuals have gone extensively into the business, and several large corporations have been formed, the largest of which is that managed by the well known stockman, Montague Stevens, who is associated with General Miles and others in the western part of the county.

All of the principal sheep herds of the county have been bred to high-grade Merino bucks, largely imported from Europe.

Nearly all of the small ranch owners living in the mountainous sections of the county are engaging with profit in the business of raising goats. There is no market less subject to fluctuation than the market for mohair, and with the certainty of good prices and the excellent adaptation of a large portion of the county to the raising of the finest breeds of Angora goats, it is one of the most desirable enterprises for the man of small means to engage in.

WESTERN SOCORRO COUNTY.

Western Socorro County comprises a stretch of territory several times the size of the State of Rhode Island, that will, when it is settled and thoroughly developed, become one of the richest portions of New Mexico.

First is all that rich mining country in the Mogollon Mountains, which, though yet practically undeveloped, except in a few instances, is now the greatest gold camp in the Territory. And there are many other parts of western Socorro County yet unprospected which will without doubt some time in the near future prove rich in mineral.

Then there are numerous streams, in the most fertile valleys, where the most prolific agricultural crops and fruit can be raised. Besides all this, there are immense ranges for cattle and sheep, always covered with

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the finest grass, which would be a source of wealth in itself if there were nothing else.

Hitherto the valleys and mesas have been occupied by the big cattle companies, who practically held the entire country with the exception of a comparatively few small ranchmen along the streams. But the conditions have now entirely changed. The big cattle companies have nearly all gone out of existence, and their places are being taken by ranchmen who cultivate small farms, raise their own produce, and also raise small bunches of cattle. At one time the ranges were overstocked with cattle by the big companies, running at large until there was a lack of feed for all; but now there is plenty of grass, and more, too, for all the stock in the country. Besides, it has been demonstrated to the small ranchmen that having 100 cattle which can be kept practically under the owner's eye, is a source of much more profit than 500 running on a larger range.

As to crops and fruits, the small ranchmen who have lived there for years have been able to raise an immense yield of farm products to the acre, and those who have given it a thorough trial have found that all kinds of fruit do remarkably well. In fact, such fruit as apples, plums, cherries, and kindred fruits do much better than on some other lands noted for their fine fruits.

All it needs in this great but thinly settled region is more settlers, a little thrift and enterprise, and markets for their crops, to make this region one of the most prosperous to be found anywhere, and the development and working of the known valuable mines would settle the market question.

TAOS COUNTY.

The valley of Taos, the county seat of Taos County, is the center, approximately 18 by 30 miles in extent, and has a population of about 7,000, the total population of the county being about 11,000. There are numerous valleys within the county limits, the largest being about 10 by 12 miles in extent.

The wealth of the choicest agricultural and mineral lands and the unlimited supply of water are phenomenal. But few localities in the United States afford the combination to be found here of a rich, productive farming country surrounding an immediate home market for its products. The price of land, however, is very cheap. Tracts of A No. 1 land, varying in extent from 20 to 200 acres, now under cultivation, and with a perpetual water right, can be bought for from $10 to $20 per acre, and lands suitable for colonization, with a river frontage, in tracts from 500 to 1,500 acres, for $5 per acre. Water for the irrigation of these lands is very easy of development and wood is abundant.

The Taos Valley is most picturesque. On the east it is surrounded by mountains in the shape of a half-moon, with no foothills extending out into the mesas to break the view or diminish their grandeur. Several very deep canyons penetrate these mountains for a distance of from 20 to 25 miles, and pour their floods out on the valley lands, where they may be easily used for irrigation.

Eleven streams issue into and cross this valley in a westerly direction, draining a great area of high mountains. When these streams reach the valleys the volume of some of them is as much as 400 or 500 cubic feet. Taking the whole course of the Rio Grande Valley, this section is usually known as the Taos Valley, and it is estimated that there are about 180,000 acres of land subject to the influence of irrigation.

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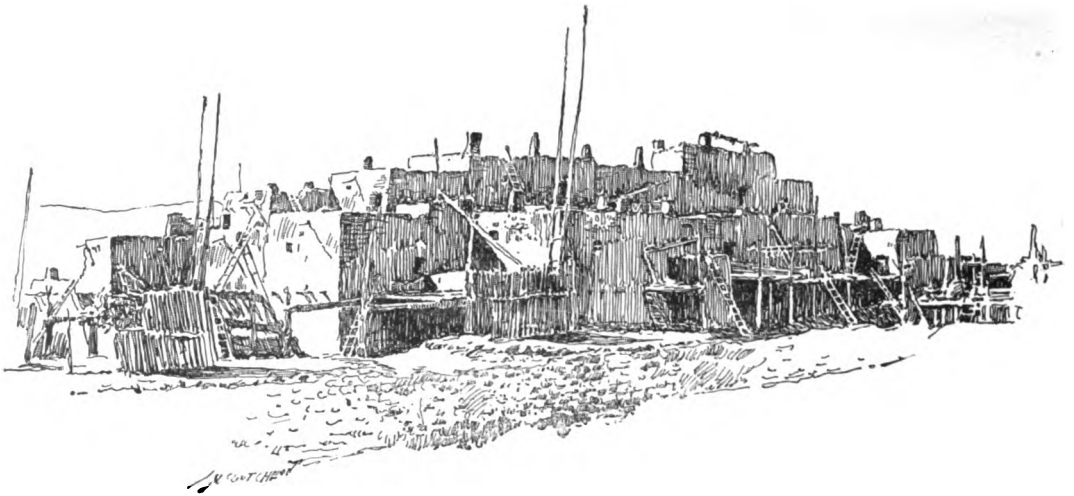

INDIAN PUEBLO VILLAGE AT TAOS.

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There are now from 25,000 to 30,000 acres irrigated and cultivated in the valley, and its population is only about 10,000 people. At the very lowest estimate this same land would support fully 20,000 people, and with close and intensive cultivation these figures could be increased to 50,000, which would allow a 10-acre fruit farm to each family of five persons. This area to the Eastern man seems very small, but when it is considered that one small orchard of 5 acres near Taos produced over $400 an acre, 10 acres, therefore, intensively cultivated, would give a gross income of $4,000. How many farmers of the East realize such a sum from 160 acres of diversified crops? Of course it must be understood that this money return per acre is from trees in full bearing; but it is by no means excessive or a prize yield; it is simply what can be done with average good culture.

Speaking of the productiveness of the soil of Taos County, one of the earliest explorers says: "The harvest for one year is sufficient for seven. When they begin to sow, the fields are covered with corn that has not been gathered." Taking corn, the crop mentioned, the yield will be well up in the neighborhood of 80 bushels per acre, and other crops will be in proportion.

All fruits and grains of the temperate zone flourish here to perfection, while root crops, such as potatoes, beets, turnips, parsnips, onions, etc., reach a high standard of excellence. Alfalfa is an important product and ranges from 4 to 5 tons per acre, bringing at market from $12 to $14 per ton. This is a good section for fruit. Apples, peaches, plums, and pears grow to perfection and find a ready market at profitable prices.

This county of Taos is commonly called "The Garden of Eden," and, being so well supplied with water for irrigation, is an attractive country for the promotion of colonization enterprises. Many inquiries are of late being made for tracts of land that are desirable for colonization purposes, and no part of the Southwest can be more safely recommended to colonists than the rich, well-watered valleys of Taos County and northern New Mexico.

So much has been said about the necessities of irrigation and of the advantages of farming by irrigation in New Mexico that the reader might very properly conclude that in no portion of the Territory can agricultural pursuits be carried on without irrigation.

It would be unfair to certain localities to fail to state that in the higher mountain valleys and high mesas or table-lands crops grow successfully without irrigation.

Especially has this been proved to be so in the northeastern part of Colfax County. Here wheat, oats, barley, hay, potatoes, and fruits grow without irrigation. Johnson mesa, east of Raton, which until a few years ago was used only as grazing land for sheep and cattle, is now settled up by several hundred prosperous farmers. Information comes from the land office for this district, situated at Clayton, Union County, N. Mex., that filings under the United States land laws in that office by settlers on these higher table-lands, as well as on irrigable lands, are rapidly increasing in number.

UNION COUNTY.

Union County, the northern county of the Territory, touching Texas on the south, Oklahoma on the east, and Colorado on the north, was created in 1893 by an act of the New Mexico legislature, and is a part of three older counties, Colfax, Mora, and San Miguel. Its area is in

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acres 4,126,000, mostly grazing land, abundantly watered by springs and well-supplied streams, and broken frequently by canyons in the northern and southern parts.

The population of Union County is between 5,000 and 7,000, almost without an exception prosperous and enterprising. Never in the history of the county has there been an appeal for assistance because of poverty by the inhabitants, nor is there a pauper within the confines of the county.

The industries are cattle and sheep raising, both of which have for two years past proven wonderfully remunerative; with summers free from hail and severe inclemency, and winters during which heavy snows and blizzards known to northern range, are noticeably absent. Irrigation, which has blessed her sister domains in the south, is not as yet to any great extent practiced in Union County, although on the Cimarron River, a stream rising near the town of Folsom and flowing south near the northern and eastern lines of the county, are many fine farms stretching along both sides of the river for a distance of 50 or 60 miles to the Oklahoma line, raising alfalfa and garden produce.

The altitude of 5,230 feet is especially recommended for all bronchial and pulmonary affections, asthma, etc., which diseases are entirely unknown to the natives of this section of the West. A physician of twenty years' residence in this portion of the Territory made the astounding statement not long ago before a medical meeting in the East that "he had never known a fatal case of pulmonary trouble among people born in this section; and that visitors suffering from consumption, excepting those in the last stages, received immediate help from the climate." Statistics show that Union County enjoys over three hundred days of sunshine yearly, and that fogs and dampness are unknown.

The taxable property of the county is $2,000,000; the debt, including the court-house bonds, is less than $40,000, and the rate of taxation low.

The principal town of Union County is Clayton, situate on the Union Pacific, Denver and Gulf Railroad, 126 miles from Trinidad, Colo., 342 miles from Denver, and 11 miles from the Texas line on the south. This place, rising from a primitive cattle-shipping point in 1889, which on more than one occasion the "festive cowboy," then "lord of the plains," "took in," has matured into a well-built village of 800 inhabitants, with stone buildings and modern improvements, water system, and electric lights. It has also a $10,000 brick schoolhouse recently built, a $20,000 court-house and jail, and a new hotel costing $15,000.

The amount of business transacted—supplies for the ranches as far away as the Canadian River on the south, 100 miles to Oklahoma points on the north and east, sold by the wholesale and retail stores—aggregates nearly $500,000 annually. From Clayton is shipped each year 1,500,000 pounds of wool, which is marketed in July and August, from 100,000 lambs and 50,000 sheep.

Clayton is the site of the United States land office, within the jurisdiction of which are 7,000,000 acres of Government land open for settlement and sale under the land laws of the United States, with a total settlement in 1897 of 72,010 acres.

Neat residences well kept impress the visitor at once with the prosperity of the place.

The next largest town in the county is Folsom, which town is also situated on the railroad, 56 miles north of the county seat, Clayton; prettily located, nestling in the foothills near the base of Mount Couplin, an extinct volcano, and at the head waters of the Cimarron

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River. Canyons and beautiful drives are on every hand, and green alfalfa fields, from which are cut, baled, and shipped many tons of feed each year.

Folsom has three wholesale stores besides several smaller ones and two most excellent hotels. The place is a favorite summer resort for people from Texas, its even temperature and cool nights together with the beauty of its scenery tempting the traveler from the warm districts of the South. Its population is 900. It has been justly called "the Bijou of the Mountains" from its unique location.

SHEEP.

Union County with its broad expanses of grazing land is well adapted for sheep culture, the largest flock in the Territory belonging to a single corporation and shearing 400,000 pounds of wool. This flock numbers 53,000 head, and runs on its own ranges, while the small owner, with his 1,000 sheep, enjoys the same privileges of Government pasturage. The number of sheep in this county is 500,000, for the most part graded merinos, averaging 6 pounds of wool. Loss from storms and scab is small, being less than 6 per cent annually, while the increase for the past ten years has averaged 80 per cent. The clips are sold in the railway towns in July and August to the buyers who come from the East, the average price for 1898 being 12 cents per pound.

CATTLE.

Formerly Union County was one vast range on which grazed hundreds of thousands of cattle. The day, however, of the cowboy and large herds of cattle is a thing of the past and has disappeared. The county tax books show that 40,000 head of cattle are still left and being carefully looked after and fed by farmers who own from 50 to 600 head each. These are well-graded Herefords and Shorthorns, and are proving a paying investment to their owners. They are either marketed or sold to buyers from Kansas or Colorado.

RAILROADS.

Union County is crossed by the Union Pacific, Denver and Gulf Railroad, a road running from Denver, Colo., to Fort Worth, Tex., a distance of 780 miles, which enters the county at a point near Folsom and leaves it at Texline, Tex. This road, which was built in 1888, has during the past five years improved greatly its roadbed and rolling stock, until it has become one of the best roads in the West. Its passenger service is, because of its new and excellent coaches and fast-running trains, worthy of particular mention, and the traveler, leaving New Mexico one morning, reaches by close connections the city of Denver the same afternoon and Chicago the following evening. The road has, in way of improvements in Union County for the first six months of 1898, laid 10 miles of 65-pound steel in place of 52-pound rails; has fenced 41 track miles or 82 linear miles; has ballasted 25 miles of roadbed 15 inches deep with cinders, besides building sheep-dipping plants at both Folsom and Clayton with a capacity of 10,000 sheep daily.

A new and roomy station has also been erected at Clayton, equipped with electric lights. This road is a most patent medium in moving New Mexico cattle to northern ranges, and thousands of head are driven annually from the Pecos River district, in southern New Mexico, to Clayton and Folsom, where they are shipped to Wyoming, Monta-

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and Eastern markets. In the fall of the year no less than 200,000 sheep are also carried by the Denver and Gulf road to Colorado feeding points.

SCHOOLS.

Union County has two new school buildings, made of pressed brick and native sandstone, one at the county seat, Clayton, costing $10,000, and the second, completed during the past year, at Folsom, at a cost of $9,000. Several new edifices for educational purposes have been erected in the interior during the past few years to accommodate the needs of the growing population, and the gain in matters of education is a very considerable one.

The average length of school terms in this county is eight months.

COAL.

Coal has been found in several portions of the county in considerable quantities, and it is of excellent quality. The best is found on Johnson's Mesa. The coal fields being some distance from the railway they are being slowly developed, using it almost entirely for home consumption. The records of the land office show entries of 2,600 acres of coal lands in Union County.

Stone for building purposes, the white sandstone, is found in abundant quantities, also in different portions of the county. The quarry near Clayton now furnishes the material for the buildings of that town. Gold and copper, though not in paying quantities, have been discovered in the northern part of the county, and along the canyons of the Cimarron River.

COST OF LIVING.

Exceptional inducements are offered the homeseeker in this county. Should he wish to engage in ranching he may select his homestead from the thousands of acres of Government land at a cost of $16 for his 160 acres. He will find the expense of living not materially different from that in the East. Flour costs $2.80 per 100 pounds; meats and grain are cheaper than they are in the far East, and groceries at prices charged in Denver or Kansas City, and in this climate of sunshine, after a few years, the summer heat of eastern districts unknown in the arid portions of the West and the rigors of severe winters of the Orient, will hold out no inducements to him to leave the country of his adoption.

VALENCIA COUNTY.

Valencia County is one of the largest counties of New Mexico, reaching from the Arizona line on the west to the line of Guadalupe County on the east. The western as well as the eastern high plateaus of the county afford splendid pasture for several hundred thousand head of sheep, whose owners, under the present prosperous condition of the sheep business are growing rapidly rich.

Fine bodies of timber lands are found in the Manzano and Zuni mountains, while the Rio Puerco Valley is known to contain large beds of coal, gypsum, and a superior grade of building stone.

Farming is almost exclusively confined to the valley of the Rio Grande, which river flows from north to south through the center of the county. The soil here is extremely rich, and is being made better year by year through the application of river sediment which is brought onto the land by means of irrigation. Wheat yields abundant crops of

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VINEYARD, VALENCIA COUNTY.

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a superior grade; corn, oats, barley, and beans can not be surpassed for yield and quality, while in the way of horticulture the county is destined to take a prominent place among the fruit producing counties of the Territory.

Apples, pears, and peaches are grown profitably, while of grapes we have not only the justly celebrated Mission grape, but also such other European varieties as the Tokay, the Muscat, etc.

Alfalfa is grown here in large quantities and brings good returns; vegetables of all kinds and varieties yield surprisingly large crops with but little labor and care.

On the western mesas of the county the canaigre root is found in abundance. As the demand for this root increases from year to year for tanning purposes, an important industry will be developed in that line within the course of a few years.

Sugar beets have been planted in a small way in different parts of the county. Tests made of them have given highly satisfactory results as to percentage of sugar and purity, with indications of a yield of about 30 tons to the acre. As soon as a sugar factory is established somewhere in the valley of the Rio Grande a large portion of the farming land of the county will be devoted to beet raising.

RAILROADS IN NEW MEXICO.

The Atchison, Topeka and Santa Fe Railroad, one of the greatest systems of railroads in the entire country, traverses the Territory of New Mexico from north to south, with numerous branches running into the mountains. The general direction of the road from the Colorado State line at Raton Pass to Rincon Junction is nearly south. From Rincon Junction to Deming its direction is southeast-westerly, and to the Texas line south-southeast. Connection is made with Santa Fe by an 18-mile branch from Lamy Junction.

The Denver and Rio Grande affords the means of ingress from the north by the way of Denver, and is undoubtedly the most magnificent scenic line ever built. To other sections stage lines afford communication and transportation over the best roads in the world, and the tourist, health seeker, or the scientist need have no fear of experiencing discomforts in traveling through New Mexico. This road runs about 175 miles through our Territory.

The Pecos Valley and Northeastern Railroad extends 89 miles from Pecos City, Tex., northward to Eddy, the county seat of Eddy County, and 73 miles to Roswell, the county seat of Chaves County. The road was completed in 1890 and the extension from Roswell, N. Mex., to Amarillo will be 208 miles, making the entire length of the line 372 miles. The Roswell extension enables the southeastern part of the Territory to also have immediate connection with the Denver and Gulf, giving a connection in addition to the Texas and Pacific route as well as with Denver, Colo. By next spring southeastern New Mexico will be able to ship stock and its varied products directly to larger markets without having to drive across the country to the Santa Fe, in central New Mexico, or to ship around through Texas, over the Texas and Pacific, to Fort Worth, Tex.

The Union Pacific, Denver and Gulf Railroad is built through Union County in the northeastern corner of this Territory for a distance of about 80 miles. A great quantity of stock is shipped over this road from Clayton, the county seat of Union County.

The Southern Pacific Railroad extends entirely across the south-

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western part of New Mexico, running almost due east from Stein's Pass, where it enters the Territory on the western boundary, and connects at Lordsburg for the Clifton copper mines; at Deming with the Atchison, Topeka and Santa Fe system, and at El Paso with the Texas Pacific and Galveston, Harrisburg and San Antonio. About 150 miles of the Southern Pacific runs through New Mexico.

The Alamagordo and Sacramento Mountain Railway has completed its line from Alamagordo up to the Sacramento Mountains, a distance of 15 miles. These mountains are particularly noted for their very heavy growth of timber, and the building of this road will be the means of opening up considerable improvements in that section of New Mexico.

The Santa Fe Pacific (formerly the Atlantic Pacific Railway), beginning at Albuquerque, on the Rio Grande, extends in a westerly direction to the western boundary of New Mexico, taking in about 200 miles of the Territory, and continues on to the Pacific coast, in California.

The Silver City, Deming and Pacific Railway runs from Deming to Silver City, a distance of about 45 miles. This is a branch of the Atchison, Topeka and Santa Fe road.

Several important railway lines from the East are headed toward New Mexico, and will build through our Territory.

It will be seen from the course of the above roads that New Mexico possesses the advantage of easy access, and I believe that the next year will show many miles of new roads through our Territory, which will tend to open up new country and add largely to our wealth and development.

The New Mexico exhibit at the Omaha Exposition, as shown by the report of Hon. J. J. Leeson, manager, follows:

As commissioner and manager of the New Mexico exhibit at the Trans-Mississippi and International Exposition held at Omaha, Nebr., from June 1 to November 1, 1898, I respectfully submit the following report:

The States and Territories making exhibits here have revealed to the world their great wealth and wonderful resources, and it is but just and right that honors should fall where honors are due. Nebraska should be honored by her sister States and Territories and the entire world, more especially when our nation is engaged in a great war with a foreign power, for the enterprise she has shown in bringing about such an enormous and creditable exposition. This is only second to the great World's Fair at Chicago, and in many ways it even surpasses that. Each State and Territory should be honored for its valuable assistance in showing, through the medium of this exposition, its wealth and resources. Many of them made most creditable exhibits and will greatly profit thereby, and none can hope to be more benefited than our own great Territory. I say this for several good reasons.

First. New Mexico has the finest all-year climate on the whole American continent.

Second. New Mexico has more land open to location and preemption for the prospector or farmer than any State or Territory in the Union.

Third. New Mexico has more grazing lands than any other State or Territory.

Fourth. New Mexico has the finest home market for her products of any State or Territory in the Union.

Fifth. New Mexico is by far the best sheep and stock country.

Sixth. New Mexico offers a better field to-day to the capitalist, manufacturer, mechanic, or farmer than any country now known.

The exhibit of our Territory now at Omaha is not only a credit to New Mexico, but to the nation.

The mineral exhibit embraces some 50 tons, representing over 85 districts, and for size, richness, and variety was not surpassed by any State or Territory. We exhibit nothing but New Mexico productions, and while, owing to our financial condition, we were not able to purchase regular mineral cases and mount and classify every specimen, yet the mineral exhibit of New Mexico is the admiration of all who see it and is the attraction of the exposition.

The agricultural exhibit is very fine. It embraces over 125 varieties of wheat, 19 of oats, 8 of barley, 11 of rye, 2 of rice, besides a great many varieties of other cereals and a magnificent assortment of grasses. The fruits and vegetables are very fine. Especially must this be said of the exhibit of the Pecos Valley Irrigation

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Company, the Maxwell Land Grant Company, and the agricultural college at Las Cruces, N. Mex.

There is also a very interesting sugar-beet exhibit from Eddy, N. Mex., showing the process of the beet to pulp and from pulp to sirup, then to brown sugar, thence to a lovely white granulated sugar. This display has proved a great advertisement for New Mexico.

The horticultural display is very fine, demonstrating the fact that the sunshine, soil, irrigation, and climate is peculiarly adapted to the successful raising of large, handsome, fine-flavored fruit of all kinds.

The stock and wool interest is well represented by fine samples of wool of various improved grades.

The fine arts and historical exhibit of New Mexico is one of the most interesting features of the exposition, and is too numerous to mention in this report. Among the most prominent, however, is the gold and silver filigree table, the property of the Woman's Board of Trade of Santa Fe; New Mexico's famous old bell; the old bottle iron snake, compass, madstone, and petrified peach.

In the line of literature I received from the bureau of immigration the Eddy Argus; from the Santa Fe Railroad Company the Albuquerque Democrat and the Weekly News, over 100,000 copies, which I distributed to visitors; also many copies of the Governor's annual report, which has attracted widespread attention, the distribution of which, being an official document, will greatly benefit New Mexico. Besides these distributions New Mexico has received over 120 columns of write ups in the various leading newspapers of the great North and West, the value of which can not be calculated.

The Santa Fe Railroad has done everything in its power to assist us, and too much praise can not be accorded that route by the people of our Territory. Mr. W. B. Biddle, the freight traffic manager, and Mr. John E. Frost, of the land department, personally rendered very valuable assistance and demonstrated great interest in the progress and growth of New Mexico.

At the conclusion of the Omaha Exposition I shall render to you a full and complete report of the New Mexico exhibit.

THE PRESS.

Of the 18 counties in New Mexico, newspapers are published in 15. Cities, towns, and villages in which papers are published number 30, of which 14 are county seats. Of the 56 papers published in New Mexico 5 are daily, 1 triweekly, 47 weekly, and 3 monthly.

Politically the papers are divided as follows: Republican, 19; Democratic, 18; religious, local, etc., 11; independent, 8. The papers, particularly the dailies, have large circulations and are influential in their respective communities.

Much of the development of the Territory is due to the energy and enterprise of the newspaper men, which has been a labor of love, for in New Mexico, like in many other States and Territories of our Union, the newspaper business is not, from a purely financial standpoint, a lucrative one.

Following is a list of the newspapers printed in New Mexico:

Albuquerque, Bernalillo County:	
Abogado Cristiano Neo Mexicano (Spanish and English)	Methodist.
Bandera Americana (Spanish)	Republican.
Citizen	Republican.
Citizen (weekly)	Republican.
Morning Democrat	Democratic.
News	Independent Republican.
Nuevo Mundo (Spanish)	Independent.
Aztec, San Juan County:	
San Juan County Index	Independent.
Bland, Bernalillo County:	
The Herald (weekly)	Independent.
Cerrillos, Santa Fe County:	
The Rustler	Local.
Chloride, Sierra County:	
Black Range	Republican.

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Clayton, Union County:	
Enterprise	Republican.
Union Democrat (English and Spanish)	Democratic.
Deming, Grant County:	
Headlight	Democratic.
East Las Vegas, San Miguel County:	
Optic (daily)	Silver Democratic.
Optic (weekly)	Silver Democratic.
Voz del Pueblo (Spanish)	Independent.
Eddy, Eddy County:	
Current	Democratic.
Pecos Valley Argus	Independent Republican.
Elizabethtown, Colfax County:	
New Mexico Miner	Silver Democratic.
Farmington, San Juan County:	
San Juan Times	Democratic.
Folsom, Union County:	
Independent	Silver Republican.
Gallup, Bernalillo County:	
Gleaner	Independent Democrat.
Hillsboro, Sierra County:	
Sierra County Advocate	Democratic.
Labelle, Taos County:	
Cresset	Independent.
Lascruces, Donna Ana County:	
Donna Ana County Republican	Republican.
Independent Democrat	Democratic.
New Mexico Collegian (monthly)	Collegiate.
Rio Grande Republican	Republican.
Southwestern Farm and Orchard (monthly)	Agricultural.
El Tiempo (Spanish).	
Las Vegas, San Miguel County:	
Independiente (Spanish)	Republican.
Optic (see East Las Vegas).	
Revista Católica (Spanish; edited by Jesuit fathers).	Catholic.
Stock Grower and Farmer	Stock and agriculture.
Lincoln, Lincoln County:	
News (English and Spanish)	Democratic.
Lordsburg, Grant County:	
Western Liberal	Republican.
Mora, Mora County:	
Anciano (Spanish)	Protestant.
Raton, Colfax County:	
Range	Republican.
Reporter	Democratic.
Red River, Taos County:	
Mining News	Independent.
Roswell, Chaves County:	
Record	Democratic.
Register	Independent.
San Marcial, Socorro County:	
Bee	Republican.
Santa Fe, Santa Fe County:	
Boletin Popular (Spanish)	
New Mexican (daily)	Republican.
New Mexican (weekly)	Republican.
Nuevo Mexicano (Spanish)	Republican.
Silver City, Grant County:	
Eagle	Democratic.
Enterprise	Republican.
Independent	Independent Democrat.
Socorro, Socorro County:	
Chieftain	Republican.
Industrial Advertiser	Democratic.
Springer, Colfax County:	
Colfax County Stockman	Democratic.
Tulerosa, Dona Ana County:	
Chief	Republican.
White Oaks, Lincoln County:	
Eagle	Democratic.

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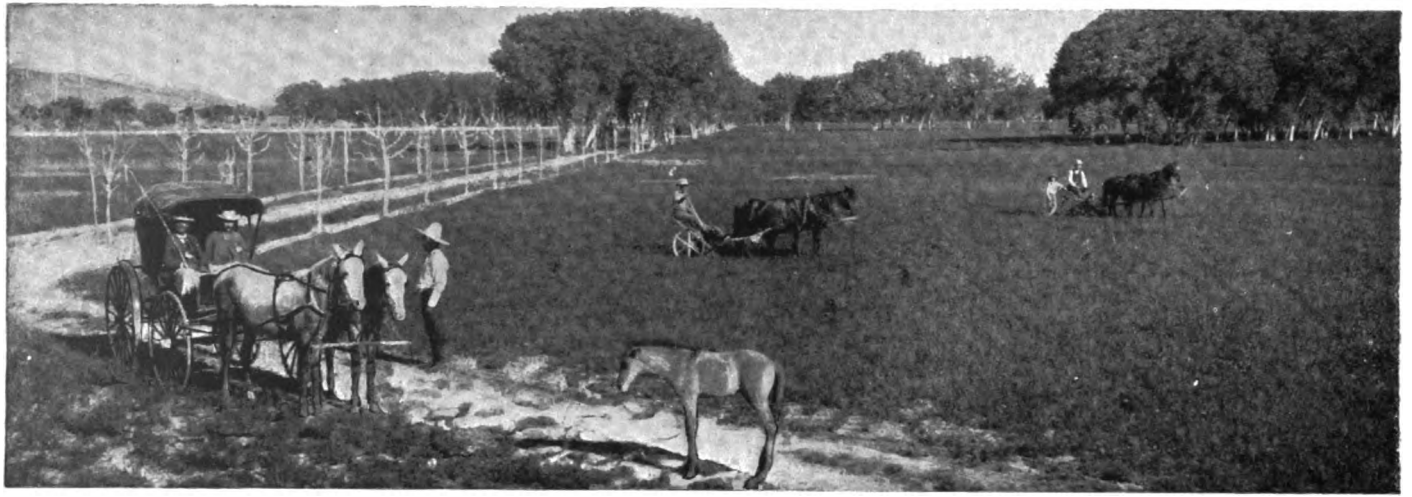

RIO GRANDE VALLEY RANCH

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RESOURCES.

The resources of New Mexico are boundless, and the possibilities of development in the Territory of New Mexico in numerous directions are unequaled by those of any other State or Territory in the Union. On account of the varied elevation almost everything that flourishes in the temperate zone, and many fruits that belong to the Tropics, grow to perfection in New Mexico. As a stock country it is excelled by none, in addition to which large, rich deposits of gold and silver, coal, iron, copper, sulphur, marble, building stone, and many different kinds of precious stones are found; New Mexico being the principal source of supply of the world for turquoise, which is of the finest quality and color. What we need to develop the mines, as well as the agricultural, stock growing, and other capabilities of our Territory is capital, and large fortunes are in store for those who have the money and industry to develop the wonderful resources of New Mexico. New Mexico needs more people; people who can invest in her mines and other industries which, if developed, would make our Territory one of the richest on the globe, and when the world at large becomes convinced of this, New Mexico will enter upon an era of prosperity never before dreamed of.

The ranges for sheep and cattle were never in better shape, and stock of all kinds is in excellent condition. The herds and flocks have increased in size and value very materially since the opening of the year, and with plenty of grass assured the sales of sheep and cattle this fall will bring large sums of ready money into the Territory.

Every prediction made for prosperity early in the year is now in a fair way to be fulfilled, and New Mexico will exceed almost all former yearly records in the amount of revenue derived from produce, sheep, and cattle at the close of the year's work.

GOATS.

Goat raising is an industry that has prospered here on a small scale for a century or two, but just now there is a boom on and several large ranches are being started, some with the special idea of raising goats for the hides, which are used on a larger scale in this country than most people are aware af. Others are branching out in the Angora breed for the hair, which is coming more and more into use. There is no doubt but what this industry, properly managed, will prove to be very remunerative.

OFFICE OF SUPERINTENDENT UNITED STATES FOREST RESERVES,
Santa Fe, N. Mex., October 1, 1898.

DEAR SIR: I cheerfully comply with your request to furnish a brief report upon the Pecos River forest reserve.

This reserve was created by proclamation of President Cleveland, issued on January 11, 1892, and was enlarged to its present size by proclamation of President McKinley bearing date of May 27, 1898.

It comprises a body of land about 24 miles wide by 25 miles long, whose western boundary is about 8 miles east of the city of Santa Fe.

The main purposes of its formation are: First. To protect the timber growing on such reserve from destruction by forest fires and prevent the unlawful cutting of timber.

Second. To protect the snows by encouraging a dense undergrowth of young timber upon the mountain sides, thus furnishing to the many useful streams whose headwaters are found within the limits of this reserve a steady flow of water during the spring and summer months. This feature, the protection of the water supply of this region, is one of vast importance to the Territory of New Mexico, and its practical value may be readily shown by noticing how quickly the irrigating ditch cor

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an arid, desert region into a fertile farm capable of producing fruits, vegetables, and cereals as great in quantity, quality, and variety as can be found anywhere in the United States.

Among the most important streams having their source upon this reserve, and which furnish water to the valleys into which they flow, are the following: Rio Grande del Rancho, Rio del Pueblo, Rio de Santa Barbara, Rio Chiquito, Rio Las Trampas, Rio del Pueblo Quemado, Rio del Medio, Rio de Los Frijoles, Rio de Panchuelo, Rio de Namba, Rio Tesuque, and Rio de Santa Fe. These streams have their sources upon the northern and western slope and their confluence is with the Rio Grande. The principal streams of the eastern slope are the Agua Negra, Rio de Las Casas, Rio de la Cebolla, Rio de Manulitas, Rio de Sapello, Rio de Gallinas, and Rio de Tecolota, while within the central and southern portions rises the Rio de Pecos and its countless feeders, Rio de la Vaca, Rio de Manzanares, and Rio del Toro.

The forests in the higher altitudes are of pine, balsam, fir spruce, and quaking asp, while along the foot hills and lower altitudes cedar and piñon are found.

There are two mountain ranges in this reserve, the Santa Fe range and the Las Vegas range. Their altitudes vary from 8,000 feet to 13,306 feet above sea level. Of their mineral wealth but little is known; owing to the short seasons which prevail and their remote location, very little prospecting and no practical mining has ever been done. There are many instances where float rich in gold, iron, and copper has been found, but there has as yet been no well-organized effort to locate the same.

This reserve forest furnishes to the citizens of Santa Fe, Albuquerque, Las Vegas, and other towns of the Territory, a most fascinating and healthful summer resort. The numerous streams sparkle with the purest water and abound in mountain trout.

The hillsides and valleys are covered with beautiful groves of trees, and the sportsman who can climb the mountain sides will find a supply of deer, wild turkey, grouse, squirrels, and rabbits, with an occasional bear and mountain lion.

The Government now has six men stationed upon this reserve, called "forest rangers," whose duty it is to constantly patrol their respective allotments of territory and protect the reserve from loss by fire and depredation. In this connection it is pleasant to note that the best thinking people of the Territory are heartily supporting the Government in its efforts to protect the forest reserves from ruthless destruction, and it is earnestly hoped that our efforts in this direction will result in enhancing the material prosperity of New Mexico.

Respectfully submitted.

JOHN D. BENEDICT,
Forest Superintendent.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

MORAL CONDITIONS.

The material prosperity of the Territory of New Mexico is not more marked than is its moral advancement. The various fraternal societies are well represented, and there are a number of trade and labor unions.

The various church organizations are in charge of refined and cultured men, and are well represented. The following named churches are all well attended throughout the Territory in every county and city: Catholic, Episcopal, Methodist Episcopal, Methodist Episcopal South, Presbyterian, Congregational, Christian, Baptist, Mormon, African Methodists, African Baptists, and others.

The fraternal societies in existence here are as follows: Masonic, Knights Templar, Thirty-second Degree Scottish, Odd Fellows, Knights of Pythias, Ancient Order of United Workmen, Woodmen of the World, Elks, Red Men, Mystic Shriners, Junior Order of Mechanics, the different railroad organizations, and others.

We also have a large organization of the Grand Army of the Republic, with posts at different localities in the Territory. Their annual reunions are always looked forward to with great pleasure by the old soldier residents of our Territory,

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GAME AND FISH.

All parts of our Territory abound in game and fish; in fact, New Mexico is noted as being a paradise for the sportsman.

In nearly every mountain range can be found mountain lions, bears, lynxes, wild-cats, deer, mountain sheep, Rocky Mountain goats, wild turkeys, and grouse, while on the plains and in the valleys can be found quail, pheasants, Mongolian or Chinese pheasants, prairie chickens, and antelopes, and during the seasons geese, brant, ducks, plover, and snipe.

The mountain streams are well stocked with trout, while the numerous lakes and rivers are stocked with other game fish, the Government two years ago having supplemented the natural supply with a large number of different kinds of fish through the United States Fish Commissioner.

The Territory has an excellent law protecting game and fish, prohibiting the sale or exportation of either, or their wanton destruction. This law is enforced by efficient game wardens appointed by the governor in each county, who look sharply after its enforcement; the penalties for violation of the law are heavy, and the result is that every portion of the Territory is abundantly supplied with both game and fish for the sportsman. The law provides a bounty to anyone killing mountain lions, wolves, or bears.

The season for killing deer and antelopes (with horns only) is during the months of September, October, and November of each year.

The season for shooting quail, grouse, prairie chickens, pheasants, partridges, or wild turkeys is during the months of September, October, November, December, January, and February of each year. It is unlawful to kill or wound, ensnare or trap any Mongolian or Chinese pheasant in this Territory at any time for a period of five years from March 10, 1897.

The season for trout fishing begins on June 1 and ends on October 31 of each year, and bass fishing begins on July 1 and ends on January 31 of each year.

The sportsman visiting New Mexico need have no fear regarding accommodations, as proper conveyances can be secured at any point on the railroad by giving short notice; while at any of the principal towns he will find livery stables well supplied with teams and mountain wagons especially kept for the convenience of hunting and fishing parties, and who can furnish reliable drivers who are familiar with every desirable locality in their section of the Territory.

UNDEVELOPED RESOURCES.

The Territory of New Mexico is a most inviting field for capital and skilled labor, having undeveloped resources almost without limit. Millions of acres of the finest agricultural land are yet to be reclaimed by the development and proper storage of water. Communication by enlarged and cheaper railroad facilities between the various portions of the Territory is earnestly hoped for, that an interchange of home products between the mining and agricultural sections may be carried on.

A large extent of New Mexico's rich mineral lands yet remains to be explored and developed. Her grazing lands have not been fully used, owing to the failure to develop artesian water (of which the finest in

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the world is found here) and erect surface windmills, the opportunities and conditions for which are excellent.

The opportunities of industrial life offer varied and profitable inducements to capital and labor, and the agricultural, mineral, and grazing wealth should receive from outside investors the attention they deserve.

Factories might also be started with profit. In this Territory there are many plants and grasses of indigenous growth that could be used in the manufacture of paper, bagging, rope, etc. Some of the hard woods growing in this Territory, at the base of the mountains, when dry take a beautiful polish, which produces a veneering of excellent quality. Eastern manufacturers could be supplied with this article who now obtain their product from other countries. A full report is given elsewhere on the lumber and forestry of our Territory.

Respectfully submitted.

MIGUEL A. OTERO,
Governor of Territory of New Mexico.

SANTA FE, N. MEX., *October 1, 1898.*

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REPORT

OF THE

GOVERNOR OF NEW MEXICO

TO THE

SECRETARY OF THE INTERIOR

1899.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1899.

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CAPITOL BUILDING AT SANTA FE.

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REPORT

OF THE

GOVERNOR OF NEW MEXICO FOR THE YEAR ENDING JUNE 30, 1899.

SANTA FE, N. MEX., *September 20, 1899.*

SIR: In obedience to your request, I have the honor to herewith transmit to you my report of the Territory of New Mexico for the year ending June 30, 1899, showing the progress and development of our Territory during that period.

I desire to call special attention to the following subjects contained in my report: Education, statehood, report of land commissioner, railroads, irrigation, population, financial condition and taxable property of the Territory and each county, remarks concerning the Old Adobe Palace at Santa Fe, New Mexico war record, agricultural and horticultural development, mining, cattle, sheep and wool, and appropriations.

I have the honor to be, sir, your most obedient servant,

MIGUEL A. OTERO,
Governor of Territory of New Mexico.

The SECRETARY OF THE INTERIOR,
Washington, D. C.

NEW MEXICO.

GEOGRAPHICAL LOCATION AND GENERAL RESOURCES.

New Mexico covers five degrees of the north temperate zone, extending from the thirty-second to the thirty-seventh parallel. Thus it corresponds in length and latitude with the two Carolinas and the major part of Georgia on the Atlantic coast, or with Tennessee and the upper two-thirds of Alabama and Mississippi coming inland. Only Florida among the American States lies wholly south of New Mexico's lower boundary, while but seven and one-half degrees, or one and a half times the Territory's own length, would extend that boundary to the northern limit of the torrid zone. In Europe but the extreme southern parts of Spain and Greece lie within New Mexico's latitudes. All the great resorts of France and Italy, Spain and Greece, with their celebrated skies and boasted climates, lie decidedly farther north. By location New Mexico is distinctly and emphatically a southern country.

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PHYSICAL CONFORMATION OF NEW MEXICO.

The topography of New Mexico is interesting, but complex. In shape a parallelogram, with an average breadth of 335 miles and length of 367, it lies, so to speak, broadside to the sun, sloping from north to south, with an elevation of 7,000 feet in the former, sinking down to 3,500 feet in the latter, while many mountain peaks reach a height varying from 8,000 to 13,000 feet. These peaks and their connecting ranges are so scattered as to form the Territory into five distinct watersheds with their respective valleys. The Rio Grande divides New Mexico from north to south into very nearly equal portions and is to this country what the Nile is to Egypt. On the northeast the Canadian outlets the waters of that section into a tributary of the Mississippi, while on the southeast the Pecos has eroded a valley second only in extent to that of the Rio Grande, of which it is the chief tributary. In the northwest the San Juan and in the southwest the Gila collect the waters ultimately reaching the Pacific Ocean.

Each of these main rivers has a vast number of affluent streams, so great in fact that New Mexico is more largely supplied with water courses than is any other mining State or Territory. Along each stream are valleys, beyond the valleys high table lands called mesas, and beyond these the mountain ranges proper. In the mountains and in many of these mesas are deep gorges or canyons with almost perpendicular walls. These collect the water from the melting snows and convey it to the streams ramifying it in all directions. Such, then, is the topography of the Territory. Mountain peaks and chains, high table lands, and lower lying valleys, falling away to the south, thus securing a southern exposure throughout its vast extent of 122,580 square miles, or an area of 100 square miles larger than the land surfaces of New England, New York, and Maryland combined or 1,241 square miles larger than all England, Scotland, Ireland, and Wales.

ABSENCE OF MOISTURE.

The aridity of New Mexico arises partly from her location, partly from her altitude, and partly from her topography. Her location is in the midst of the formerly so-called "Great American Desert," her borders about equidistant, or 500 miles each from the Gulf of Mexico and the Pacific Ocean at their nearest approach. The Gulf of California, at its northern extremity, lies some 150 miles closer, but its water surface is inconsiderable.

The low-lying plains east of the Rocky Mountains draw the moisture-laden winds from the Gulf of Mexico, causing them to pass eastward of this section, but at the same time drawing over the Territory the winds from the Pacific and from the Gulf of California. Before these can reach New Mexico, however, they must climb, height by height, the ascending plateaus of Arizona, culminating in the bald-faced peaks of the Continental Divide. All know that the warmer the air the more water it will hold; and, on the other hand, the more the air is chilled the more it parts with its moisture. Every succeeding altitude but wrings more water from the air, just as each stronger grip of the hand squeezes more water from the sponge. When these almost desiccated winds reach New Mexico only the mountain chains and peaks can draw further moisture from them, leaving the valleys and table-lands with but the scantiest of scant supplies. This is why the ·age rainfall in the valleys of this Territory will not exceed an

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inch per month, two-thirds of the entire supply falling during the summer. Compare this with an average yearly precipitation at New York of 43 inches, Boston 45, Savannah 48, and the smallness of the rain supply will begin to be appreciated.

But altitude increases aridity by decreasing atmospheric pressure, and thus accelerating evaporation. The elevation of New Mexico averaging about 1 mile above sea level and reaching in the higher valleys to nearly 2 miles, it can be seen at once that water here most readily gives off its vapor. Especially is this true when taken in connection with the dry condition of the air and the almost ceaseless movements of the winds. The moisture that falls is immediately taken up into the air again. A snow of 2 or 3 inches in depth will pass away in a few hours, leaving the ground dry, having apparently returned into the air instead of melting. A refreshing shower in a day or two will have disappeared, leaving no mud behind. This is why any kind of a cloud is rare, and a day during some part of which the sun does not shine is almost unknown. Then, too, it must be remembered that the general slope of the country is on an average of about 10 feet to the mile, causing water, even in the streams (unless impounded), to run quickly away. For these reasons the humidity of the air in New Mexico averages about 36 per cent, while in New England it is 73 per cent, Florida 75 per cent, San Francisco 76 per cent, and the Gulf States 79 per cent.

RESOURCES OF NEW MEXICO.

FRUIT.

In the metropolitan markets of the Western States New Mexico's horticultural products command from 5 to 15 per cent greater price than the California products, owing to their size, richness in color, and peculiarly delicate flavor. In grapes, for which the Rio Grande Valley is famous, the Flame Tokay, the Muscats, the Black Hamburgs, and similar choice varieties are grown to perfection. In every quarter of the Territory are profitable orchards of apples, pears, peaches, cherries, plums, nectarines, and all the small fruits indigenous to the temperate and semitropic zones.

SUGAR BEETS.

Experiments covering a period of three years demonstrate that New Mexico excels any other country or section in the world in the quantity and quality of sugar beets. In 1896 in the Pecos Valley some 1,400 acres of beets were harvested. The average yield per acre was a little over 16 tons, and the average percentage of saccharine matter was over 16, the highest record ever made. The gross returns to the farmer averaged $67 per acre, and the cost of raising the crop was a little less than $22 per acre. The almost perpetual sunshine during the growing season is the cause of the extra percentage of sugar in the beets, and the richness and adaptability of the soil accounts for the heavy yield.

CEREALS AND VEGETABLES

Of innumerable variety are profitably produced in New Mexico. The latter are notable for size and flavor, as well as their keeping qualities. Rio Grande Valley oats took the second prize at the World's Fair. Every field crop and all classes of vegetables can be and are grown with success and profit.

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MINERALS.

It is no exaggeration to affirm that, in point of natural resources, none of the peerless Rocky Mountain States exceed New Mexico. Gold, silver, copper, iron, zinc, lead, mica, coal (anthracite and bituminous), marble, fire clay, alum, sulphur, soda, salt, asphalt, gypsum, etc., are found in paying quantities in almost every county in the Territory. In many localities are valuable deposits of onyx, while the turquois supply of the world is largely furnished by the New Mexico mines.

TIMBER AND COAL.

These essentials to the home seeker are plentiful and cheap in New Mexico. Tracts of virgin forest, large or small, may be purchased now at astonishingly low figures, since the United States court has rendered such timely service in settling titles to the land grants.

MINERAL SPRINGS.

The attention of the tourist and health seeker is especially invited to the number and varied character of the mineral waters in New Mexico. These are easily accessible by rail, and offer every reasonable accommodation to the visitor. Among such resorts are the Las Vegas Hot Springs, the Jemez Hot Springs, the Ojo Caliente Hot Springs, Hudson Hot Springs, the Sulphur Hot Springs, the Macbeth, Taylor, and Coyote mineral waters.

DESIRABLE LANDS.

New Mexico contains nearly 79,000,000 acres. Of these there are about 24,000,000 acres contained in land grants, Indian and military reservations, railroad grants, and Government entries, which leaves available an area of about 55,000,000 acres of land, capable of supporting an immense population running up into the millions.

Thousands of acres of wild lands are to be had by complying with the United States land laws, much of which is contiguous to water and is desirable for colonization purposes when ditches and water-storage reservoirs are provided. The land-grant question is no longer a bugaboo in New Mexico, and through the action of the land court titles to vast tracts have been cleared up and settled. Some millions of acres have been confirmed by the courts to private ownership, while, on the other hand, an equal acreage has been rejected, so far as the grant claimants are concerned, and the land added to the public domain, subject to entry.

OFFICIAL REGISTER.

Territorial officers.—Governor of the Territory of New Mexico, Miguel A. Otero, Las Vegas, N. Mex.; private secretary to governor, Miss N. P. Crane, Santa Fe, N. Mex.; secretary of the Territory, George H. Wallace; clerk in secretary's office, C. P. Wallace; solicitor-general, Edward L. Bartlett; auditor, Luis M. Ortiz; treasurer, J. H. Vaughn; superintendent of Territorial penitentiary, H. O. Bursum; superintendent of public instruction, Manuel C. de Baca; librarian, Judge Lafayette Emmett; adjutant-general, William H, Whiteman; mine inspector, J. W. Fleming; coal-oil inspector, John S. Clark.

Judiciary.—Chief justice of the supreme court and judge of the fourth judicial district, William J. Mills; clerk, Secundino Romero; clerk of the supreme court, José D. Sena. Associate justices of the supreme court—first judicial district, John R. McFie; clerk, A. M. Bergere; judge second judicial district, J. W. Crumpacker;

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clerk, H. P. Owen; judge third judicial district, Frank W. Parker; clerk, J. P. Mitchell; judge of the fifth judicial district, Charles Leland; clerk, John E. Griffith.

Delegate in Congress.—Pedro Perea.

Surveyor-general.—Quinby Vance.

United States revenue collector.—A. L. Morrison.

United States district attorney.—W. B. Childers.

United States marshal.—C. M. Foraker.

Deputy United States marshal.—C. A. Coddington.

Registers and receivers land offices.—M. R. Otero, register, and Edward F. Hobart, receiver, Santa Fe; Emile Solignac, register, and H. D. Bowman, receiver, Lascruces; Howard Leland, register, and George R. Guyer, receiver, Roswell; Edward Fox, register, and A. W. Thompson, receiver, Folsom, N. Mex.

District attorneys.—R. C. Gortner, Santa Fe; W. H. H. Llewellyn, Dona Ana and Otero counties; T. A. Finical, Albuquerque; R. D. Barnes, Silver City; Charles A. Spiess, Las Vegas; A. J. Nesbit, Roswell; S. Alexander, Socorro; J. Leah, Raton, N. Mex.

Public printer.—J. D. Hughes.

Indian agent.—N. S. Walpole.

Court of private land claims.—Chief justice, Joseph R. Reed; justices, W. W. Murray, Henry S. Sluss, Thomas C. Fuller, and Wilber Stone; attorney, Matthew C. Reynolds; clerk, J. H. Reeder.

Officers of Territorial institutions.—The governor and superintendent of public instruction are the ex officio members of the board of regents of the following institutions: The University of New Mexico, the New Mexico College of Agriculture and Mechanic Arts, the New Mexico School of Mines, the New Mexico Insane Asylum, and the New Mexico Military Institute.

The University of New Mexico.—Regents: J. H. Wroth, Albuquerque; E. S. Stover, Albuquerque; Juan C. Armijo and F. W. Clancy, Albuquerque; H. L. Waldo, Las Vegas, N. Mex.

New Mexico College of Agriculture and Mechanic Arts.—Regents: G. A. Richardson, Roswell; A. A. Jones, Las Vegas; P. H. Curran, Lascruces; R. E. Twitchell, Las Vegas, and L. Bradford Prince, Santa Fe, N. Mex.

The New Mexico Normal School, Silver City.—Regents: J. W. Fleming, Silver City; W. G. Ritch, Engle; J. A. Mahoney, Deming; Jo E. Sheridan, Silver City, and C. F. Grayson, Silver City, N. Mex.

Normal University of New Mexico at Las Vegas.—Regents: A. B. Smith, Las Vegas; Charles Ilfeld, Las Vegas; M. W. Browne, Las Vegas; Frank Springer, Las Vegas, and Rev. George Selby, Las Vegas, N. Mex.

New Mexico School of Mines, Socorro.—Trustees: J. P. McGrorty, Deming; Joseph E. Smith, Socorro; Juan Jose Baca, Socorro; F. G. Bartlett, Magdalena, and C. T. Brown, Socorro, N. Mex.

New Mexico Military Institute, Roswell.—Regents: Joseph C. Lea, Roswell; Nathan Jaffa, Roswell; J. O. Cameron, Eddy; Charles Wilson, Roswell; Robert S. Hamilton, Roswell, N. Mex.

New Mexico Insane Asylum, Las Vegas.—Directors: O. L. Gregory, East Las Vegas; M. Brunswick, Las Vegas; J. W. Zollars, Las Vegas; Benigno Romero, Las Vegas, and N. T. Cordova, Las Vegas, N. Mex.

Territorial board of education.—Members: Governor, superintendent of public instruction, president of St. Michael's College at Santa Fe, president of the University of New Mexico, president of the New Mexico College of Agriculture, Lascruces, N. Mex.

Board of penitentiary commissioners.—F. H. Pierce, San Miguel County; Juan Navarro, Mora County; J. T. McLaughlin, Santa Fe County; J. Francisco Chaves of Valencia County; Louis Baer of Bernalillo County.

Capitol custodian committee.—Secretary of the Territory, ex officio, Santa Fe; Solomon Spiegleberg, Santa Fe, and Alfredo Hinojos, Santa Fe, N. Mex.

Territorial board of equalization.—First judicial district, Venceslao Jaramillo, Rio Arriba County; second judicial district, Alejandro Sandoval, Bernalillo County; third judicial district, Numa Reymond, Donna Ana County; fourth judicial district, James S. Duncan, San Miguel County; fifth judicial district, John W. Poe, Chaves County.

Cattle sanitary board.—James F. Hinkle, Chaves County; William H. Jack, Grant County; E. C. Austen, Mora County; M. N. Chaffin, San Miguel County; Malaquias Martinez, Taos County, N. Mex.

Board of medical examiners.—G. S. Easterday, Bernalillo County; W. Eggert, Santa Fe County; J. H. Sloan, Santa Fe County; Joseph Cunningham, San Miguel County; W. R. Tipton, San Miguel County; T. P. Martin, Taos County, and George C. Bryan, of Otero County.

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Board of dental examiners.—B. M. Williams, of San Miguel County; D. W. Manley, Santa Fe; L. H. Chamberlain of Bernalillo; W. H. White, of Grant County, and A. A. Bearup, of Chaves County.

Members of board of pharmacy.—A. J. Fischer, Santa Fe County; W. C. Porterfield, Silver City; B. Ruppe, Albuquerque; E. G. Murphy, Las Vegas, and P. Moreno, Lascruces.

Sheep sanitary board.—Solomon Luna, of Valencia County; W. S. Prager, of Chaves County, and Henry W. Kelly, of San Miguel County.

Members of bureau of immigration.—L. Bradford Prince, Santa Fe; Felipe Chavez, Belen; W. A. Hawkins, Alamogordo; Frank Springer, Las Vegas; A. C. Campbell, Eddy, N. Mex.

Members of the board of the Deaf and Dumb Asylum.—Benjamin M. Reed, Mrs. T. P. Gable, Mrs. F. P. Crichton, and F. Muller.

Register of the thirty-third legislative assembly.

COUNCIL.

President of the council: J. FRANCISCO CHAVES.

Politics.	Members.	Post-office.	District, by counties.
D.	J. M. Valdez	Springer	Colfax, Mora, Union.
R.	J. S. Duncan	East Las Vegas	San Miguel, Guadaloupe.
R.	Eugenio Romero	Las Vegas	Do.
R.	T. D. Burns	Parkview	Taos, Rio Arriba, and San Juan.
R.	Malaquias Martinez	Taos	Do.
R.	T. B. Catron	Santa Fe	Santa Fe.
R.	T. A. Finical	Albuquerque	Bernalillo.
R.	Thomas Hughes	...do	Do.
R.	J. F. Chaves	Progresso	Valencia.
R.	H. O. Bursum	Socorro	Socorro and Sierra.
R.	J. A. Ancheta	Silver City	Donna Ana and Grant.
D.	G. A. Richardson	Roswell	Donna Ana, Grant, Chaves, Lincoln, and Eddy.

HOUSE OF REPRESENTATIVES.

Speaker of the house: MAXIMILIANO LUNA.

D.	T. B. Leib	Raton	Colfax.
R.	Bernardo A. Romero	Watrous	Mora.
R.	John R. Guyer	Clayton	Union.
R.	Rafael Gallegos	Las Vegas	San Miguel.
R.	Wm. H. Schultz	East Las Vegas	Do.
R.	Ramon de Herrera	Rociada	Do.
R.	Celso Baca	Eden	Guadaloupe.
R.	Victor Ortega	Chimayo	Santa Fe.
R.	Wm. Kilpatrick	Madrid	Do.
R.	Pedro Sanchez	Taos	Taos.
R.	V. Jaramillo	El Rito	Rio Arriba.
R.	Frank Staplin	Taos	Taos, Rio Arriba, and San Juan.
R.	A. D. McIntosh	Cedar Hill	Do.
R.	Pablo Crespin	Albuquerque	Bernalillo.
R.	Marcelino Baca	Pena Blanca	Do.
R.	E. Guttierrez	Old Albuquerque	Do.
R.	Max. Luna	Los Lunas	Valencia.
R.	Roman A. Baca	San Mateo	Do.
R.	Pablo Trujillo	Polvadera	Socorro and Sierra.
R.	F. H. Winston	Fairview	Do.
R.	Marcial Valdez	Lascruces	Donna Ana.
R.	R. P. Barnes	Silver City	Grant.
R.	W. H. H. Llewellyn	Lascruces	Donna Ana and Grant.
D.	J. E. Wharton	White Oaks	Lincoln, Chaves, and Eddy.

POPULATION.

It is impossible for me to give anything like a correct count of the population of the Territory, and what I do give is based only on such information as I am able to gather from prominent residents of the different counties.

The census supervisor will soon begin his work in this Territory,

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and I trust to be able to give an accurate account of our population in my next report.

From information which I have received in response to numerous inquiries addressed to all parts of the Territory, with a view of ascertaining as near as possible the present population, I find that the greatest gain in population was made in the principal cities, counties that are building and extending new lines of railroad, and the mining districts of the Territory. There has also been quite an influx of new residents to the following counties: San Juan, Colfax, Lincoln, Eddy, Chavez, Grant, and Otero.

The mining districts of New Mexico continue to hold out attractive allurements to prospectors, the mining industry having received a great impetus in the districts of Cochiti, Santa Rita, Hanover, San Pedro, Red River City, Elizabethtown, Amizett, Golden, Water Canon, Jarilla, San Andres, Hillsboro, White Oaks, and, in fact, every mining district in the Territory.

The construction of irrigating ditches and reservoirs in the arid regions is reclaiming vast areas and preparing them for cultivation. The home seeker, coming from the more densely populated North and East, finds the conditions so favorable to the production of fruits and grains that each year he induces more and more of his neighbors from his old home to follow his example and take up the new lands of New Mexico, and convert them into homes.

The following estimate of the population, by counties, is as nearly correct as it is possible for me to make it from the limited means of information in my possession, to wit:

Bernalillo	35,000
Chavez	5,000
Colfax	14,000
Dona Ana	12,000
Eddy	4,000
Grant	15,000
Guadalupe	7,500
Lincoln	9,000
Mora	17,000
Otero	3,500
Rio Arriba	19,000
Santa Fe	21,000
San Miguel	35,000
San Juan	5,000
Sierra	5,500
Socorro	19,000
Taos	13,000
Union	7,000
Valencia	14,000
Total	260,500

The Indian population is estimated as follows:

Pueblos	9,047
Jicarillas	832
Mescaleros	450
Navajos (Arizona and New Mexico)	15,000
Total	25,329

This makes a total population of the Territory, as estimated, of 285,829.

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STATEHOOD.

I would most earnestly renew my recommendation, made in my last report, with reference to the early admission of New Mexico as a State of the Union. The reasons given at that time for such admission are stronger now by reason of increased population, wealth, and intelligence. In that report I stated:

It is unnecessary here to repeat the arguments which demonstrate conclusively that New Mexico is entitled to statehood. Her sheep and cattle industries, as already reviewed herein, her mineral wealth, her agricultural advantages, all stand as a guaranty that the new State of New Mexico will be amply able to meet the obligations which necessarily will be incurred in the change of government and her ability to sustain her own government permanently.

The admission of New Mexico to the sisterhood of States would be beneficial alike to her people and the Federal Government. Self-government, which carries with it to every citizen the right to participate in the selection of the various officers intrusted with the management of the government, is a privilege few American citizens would willingly be deprived of, and one that all eagerly seek. Self-government would not only relieve the Federal Government of the enormous expense it is subjected to in the management of the present Territorial form of government, but would also relieve it of the responsibility of selecting the officers to manage the Territory's affairs.

Since that time our assessed value for taxation has increased and it is now more than $40,000,000, and constantly growing, while the population, caused by immigration, is also increasing rapidly. New Mexico sold more than 18,000,000 pounds of wool this year, which is 3,000,000 pounds more than ever before in her history, while her mines of copper and gold are being developed in a manner never known before. More capital has been invested in their development during the past year than previously, especially in Grant, Otero, Bernalillo, and Santa Fe counties. In this connection I quote the following from a Washington correspondent of the St. Louis Globe-Democrat.

WASHINGTON, D. C., *September 11.*

The War Department to-day made public the figures on the enlistments for the first ten regiments. Massachusetts furnished 833, which is the best showing, in proportion to population. The figures for Western and Southwestern States are as follows: Missouri, 639; Arkansas, 122; Colorado, 316; Illinois, 1,161; Indiana, 654; Iowa, 192; Kansas, 415; Texas, 548; Mississippi, 42; Nebraska, 171; Tennessee, 567; Arizona, 90; New Mexico, 121; Oklahoma, 124; Indian Territory, 109.

The Northwestern States made a very bad showing. Wisconsin furnished but 98 men; Idaho, 15; Minnesota, 122; Montana, 30; North Dakota, 13; Oregon 80; South Dakota, 9. This is a total of 367 men for all the Northwestern States. Georgia alone furnished 446, and Texas 435. The smallest number of recruits secured from any one State was two, from Nevada.

Missouri's showing was one of the best, considering the fact that no regiment of the first ten were rendezvoused there. The reports of recruiting for the ten regiments now being organized show that the Thirty-eighth, now being recruited at Jefferson Barracks, by Colonel Anderson, leads all the rest, with 485 men to its credit up to date. The nearest approach to this showing is made by the Forty-second Regiment, which is being organized at Fort Niagara, N. Y. The number of men secured for this regiment to date is 339. The total number of recruits secured for the ten new regiments to date is 4,790.

There is a slight error in the above article, where it is stated that "Massachusetts furnished 833, which is the best showing in proportion to population." This is not true for both New Mexico and Arizona did much better in proportion to the number of their people. New Mexico sent 121 and Arizona 90, or a total of 211. The census of 1890 gives Arizona's population as 59,696; New Mexico's 153,593, and Massachusetts' 2,238,943. New Mexico and Arizona, then, with a combined population of 213,289, or less than one-tenth of that of Massachusetts, furnished over one-fourth of the number sent by the State of the Pilgrim Fathers, of Adams, Webster, and Hoar.

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This is a comparison with the best in the extreme East. Now let us see what showing the two Territories make when compared with some of the sovereign States of the imperial West. Idaho, 15; Montana, 30; North Dakota, 13; South Dakota, 9; Nevada, 2; Wisconsin, 98. Total, 167, or just 44 less than that furnished by New Mexico and Arizona, whose people are "incapable of self-government." The States above mentioned have twelve United States Senators and sixteen members of the national House of Representatives. New Mexico and Arizona have two Delegates in Congress, without the right to vote on any question, because they represent constituents "incapable of self-government."

Why not statehood, then?

Under the treaty of peace concluded between the United States and Mexico, February 2, 1848, known as the "Treaty of Guadalupe-Hidalgo," it was provided that "the territory acquired by the Mexican war and under that treaty should be incorporated in the union of the United States, and be admitted at the proper time (to be judged by the Congress of the United States) to the enjoyment of all the rights of citizens of the United States according to the principles of the Constitution." Since that time, California and Colorado have been admitted, and New Mexico and Arizona (which was formerly a county of this territory) have been refused that privilege, and, I might say, right. For fifty years the Territory, through its legislature, and by the recommendations of its governors, has been asking for this recognition guaranteed by solemn treaty stipulations. As long ago as 1850 New Mexico adopted a State constitution and elected a governor and two United States Senators, and its admission was only prevented by the adoption of the celebrated "compromise measures of that year." Twenty years afterwards it held a constitutional convention which formulated a most admirable constitution. In 1876 a bill to admit it to Statehood, together with Colorado, passed both Houses of Congress, and only failed to become a law by nonconcurrence in an amendment to that bill. Again, in 1889, there was a constitutional convention, lasting nearly a month, composed of men of the highest character and ability, and their labors resulted in the presentation of a constitution which I have no hesitation in saying was the best formulated in the United States. Copies were laid before both Houses of Congress, and several bills were introduced for its admission; and since that time each session of Congress has seen bills introduced by members of both political parties for the admission of New Mexico as a State, which have so far failed, and for which failure no good reason has been given. Another bill for this purpose will be introduced at the coming session of Congress, and I urge its earnest consideration in behalf of the quarter of a million people of this Territory.

The organization of civil government in the Territory of New Mexico was unique. The organic act establishing the Territory was approved September 30, 1850; the ratification of the treaty of peace between the United States and Mexico was held May 30, 1848, and proclamation thereof made July 4, 1848, just fifty years earlier than the capture of Santiago. But two years prior to that time the United States Government had established through its military authority a complete code of civil laws for the future Territory of New Mexico, which, at that time, consisted of the present Territory, all of Arizona, and the southern half of Colorado. On the 22d day of September, 1846, Brig. Gen. S. W. Kearney, in command of the army of invasion, issued and proclaimed to the people a "bill of rights," which is still retained on the statutes unchanged. On the same day he proclaimed "the Kearney Code," which was reenacted by the legislature in 1865 and nearly all the provisions of which are still in force; and on the same day by

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virtue of his authority as brigadier-general, he appointed the following list of civil officers: Charles Bent, to be governor; Donaciano Vigil, to be secretary; Richard Dallam, to be marshal; Frank P. Blair, to be United States district attorney; Charles Blumner, to be treasurer; Eugene Leitzendorfer, to be auditor of public accounts; and Joab Houghton, Antonio Jose Otero, and Charles Beaubian, to be judges of the superior court. In his letter transmitting to the Adjutant-General a copy of these laws and list of appointments, General Kearney made the following statement:

I take great pleasure in stating that I am entirely indebted for these laws to Col. A. W. Doniphan, of the First Regiment of Missouri Mounted Volunteers, who received much assistance from Private Willard P. Hall of his regiment. These laws are taken, part from the laws of Mexico, retained as in the original, a part with such modifications as our laws and Constitution made necessary; a part are from the laws of Missouri Territory, and a part from the laws of Texas, and also of Texas and Coahuila, a part from the statutes of Missouri, and the remainder from the Livingston code.

The first governor, Bent, was assassinated the year after his appointment, at the pueblo of Taos, during what is known as the "Taos rebellion," which was suppressed with considerable loss of life by United States troops, out of which rebellion arose a number of prosecutions for treason, conducted by Frank P. Blair, United States attorney.

The civil law and the Kearney Code remained the rules of civil action down to 1876, when, by statute, the "common law as recognized in the United States of America" was adopted. This was the law of the land until the legislature of 1897 adopted a code of civil procedure.

The first legislative assembly of the Territory of New Mexico assembled in Santa Fe in December, 1847. The laws passed at that session were printed in a pamphlet, to which was added "Order No. 10," from the Headquarters of the Ninth Military Department, imposing a duty of 6 per centum on merchandise imported into the Territory. The authorization of these laws is printed in the same pamphlet, as follows:

SPECIAL ORDER, No. 5. } HEADQUARTERS NINTH MILITARY DEPARTMENT, *Santa Fe, N. Mex., February 5, 1848.*

The foregoing legislative enactments of the Territory of New Mexico, having been duly reviewed by the commanding general of the Territory, they are hereby approved, and they will be duly observed.

By order of brigadier-general,

STERLING PRICE.

W. E. PRINCE,
Aide-de-Camp and Acting Assistant Adjutant-General.

The first section of the General Orders No. 10, referred to on the title page of the laws, is as follows:

On and after the 1st day of February, 1848, the following regulations will govern the civil and military officers in the discharge of their respective duties: First, the officers named in the statutes as secretary of Territory, United States district attorney, and United States marshal are hereby abolished.

It is believed the above résumé of the methods of introducing American laws into conquered Spanish territory may be of interest at this time when similar conditions exist which may require similar action on the part of the Government.

OFFICE OF THE BOARD OF PUBLIC LANDS,
Santa Fe, N. Mex., September 5, 1899.

SIR: I have the honor to submit herewith a special report as commissioner of public lands of the Territory of New Mexico.

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By an act of Congress, approved by the President June 21, 1898, certain grants of land for the benefit of the public schools of New Mexico and the higher educational institutions of the Territory, and for internal improvements, were made by the United States to the Territory of New Mexico.

For the support of the common schools, sections 16 and 36 in each township were so granted. This endowment, estimated at about 4,000,000 acres, or about equal to the area of Connecticut and Rhode Island together, which is large in size, is of comparatively little money value, as the greater part is arid land, only fit for grazing when rains develop the natural grasses, but with the development of water in New Mexico will become of greater value and productive of very beneficial results.

In addition, the United States is to pay to the Territory, for the support of the common schools, 5 per centum of the proceeds of the sales of public lands from and after the approval of the act of Congress, July 21, 1898. This money is to form a permanent fund, the interest of which alone is to be expended in support of our public schools.

For the support of higher educational institutions of the Territory, Congress made the following provisions: Lands to the extent of two townships in quantity are authorized to be reserved for the establishment of a university; in addition to the two townships, 65,000 acres of nonmineral, unappropriated, and unoccupied public land were granted, together with all saline lands in the Territory, for the use of said university.

For the Agricultural College of New Mexico, 100,000 acres are reserved and granted.

Congress also provided that the schools, colleges, and universities shall forever remain under the exclusive control of the Territory, and that no part of the proceeds arising from the sale or disposal of any lands granted for educational purposes, or income thereof, shall be used for the support of any sectarian or denominational school, college, or university.

In addition to the above, the following grants are made for the purposes mentioned:

	Acres.
Water reservoirs, for irrigating purposes	500,000
Improvement of the Rio Grande in New Mexico	100,000
Insane asylum	50,000
School of mines	50,000
Deaf and dumb asylum	50,000
Reform school	50,000
Normal schools	100,000
Institute for the blind	50,000
Miners' hospital	50,000
Military institute	50,000
Penitentiary	50,000
Total	1,100,000

It is well to state that this Territory has already established and in successful operation a university at Albuquerque, a military institute at Roswell, an agricultural college at Las Cruces, a school of mines at Socorro, and normal schools at Las Vegas and Silver City, and an institute for the deaf and dumb at Santa Fe. These institutions, being created by law during the past ten years, have been solely supported by direct taxation. The grants of land above described will place them on a firm foundation and will enable them to do the good intended.

A commission was created to select these lands in quantity as indemnity, as provided by the act, which commission consists of the governor, surveyor-general, and the solicitor-general of New Mexico, acting as a commission, under the direction of the Secretary of the Interior.

The lands selected for agricultural and university purposes and sections 16 and 36 reserved for the common schools are to be leased for a term not to exceed five years, and are not for sale. The remainder of the lands granted may be leased or sold in such annual amounts as authorized by the Territorial legislature.

The thirty-third legislative assembly of New Mexico passed an act, which was approved by the governor of the Territory, March 16, 1899, prescribing regulations and rules to carry into effect the letter and spirit of the Congressional enactment granting the lands as heretofore indicated, the legislative enactment creating the board of public lands consisting of the governor, solicitor-general, and commissioner of public lands, for the management, lease, and sale of public lands, so generously granted by Congress.

The legislative enactment is very carefully drawn, and its provisions fully protect the interests of the educational institutions and public schools.

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The Federal commission to select public lands and the Territorial board of public lands to manage and dispose of them have organized and vigorously taken in hand the management of the trust. Already several hundred applications for the leasing of school land have been secured, at an annual rental ranging from 2 to 12 cents per acre. As soon as applications are approved and leases executed it is hoped that the amount of money to be realized from the leasing of these lands will be large.

It is already becoming apparent that the vast stock interests of the Territory, a fair estimate being about 1,500,000 head of cattle and 4,000,000 sheep, not to count horses, mules, and goats, will demand to lease at remunerative figures every acre of land that the Territory will have the right to lease.

In the matter of selling lands, the Territorial board of public lands is acting upon the principle that for the present only a small amount of the lands granted should be sold, sufficient at least to defray the United States land office fees. The selection should be made as rapidly as possible, in order to secure to the Territory the best lands available. Taking into consideration the willingness of the people of New Mexico to tax themselves for the support of the public schools and higher educational institutions, as shown by the records of the taxes assessed and collected since 1889, and the fact that the donations of land by Congress will within a few years bring in a revenue which will constantly grow, there can be no question but that the prospects for the educational and Territorial institutions are very bright.

With the growth and development of the Territory, which is apparent to the most casual observer, the demand for better schools grows apace. Better schools means a higher rate of taxation, but with the endowment of the public lands so generously granted by the Congressional act of June 21, 1898, and the income therefrom, which will become evident within a year or two, there will be no necessity to increase taxation in order to obtain better schools.

I would respectfully call your attention to section 10 of the Congressional act, which restricts the leasing of more than one section as well as the sale of more than one-quarter section of land to one person.

I earnestly recommend that we be relieved from these limitations, which, as they exist, are an obstacle and curtail the benefits that we expect to derive from the act. Six hundred and forty acres should be the minimum not the maximum acreage to any one person. Much of our lands are valuable only in large tracts, and available as such for grazing. There never was any good reason for such restrictions in the Southwest. The State of Colorado authorizes its board of land commissioners to lease any portion of the land of the State. I see no reason why we should be the exception.

The university lands should be subject to sale, thereby creating an available fund to extend the work of this worthy institution.

I would further recommend that part of section 6 of the Congressional act "The building known as the Old Palace in the city of Santa Fe" revert back to the Federal Government. This historical building is national, and should remain always under the care of the Government, and I might suggest as a western branch of the Smithsonian Institute.

Very respectfully, your obedient servant,

ALPHEUS A. KEEN,
Commissioner of Public Lands.

Governor M. A. OTERO,
Santa Fe, N. Mex.

PREHISTORIC TIMES.

Among the Pueblos the houses were communal as well as the lands, the building consisting of from two to five stories, each successive one receding several paces from the face of the one immediately below it, and each entered only from above by means of scaling ladders let down or taken up for that purpose. These edifices were constructed of adobe (sundried bricks), cobblestones held together by adobe mortar, or matched stone without mortar, the numerous rooms being ceiled with beams covered with earth. Each village or community usually contains two or three of these buildings, which looked more like fortresses than dwellings, though indeed designed for both purposes.

One such structure at Weqw gi was 700 feet in circumference and

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contained 99 rooms. Pueblo Bonito was 544 feet long by 314 wide, with 300 apartments. The pueblo of Penasco Blanco was 1,700 feet long and comprised 112 rooms. Among the remains of the sacred city of Pecos are the ruins of the temple, which for ages preserved the holy fire of Montezuma. Its dimensions are 191 feet in length, 35 feet in breadth, and 50 feet in height, encompassed by walls 6 feet in thickness. The interior is divided in compartments, having cells, cisterns, and tanks, but the outworks and turrets are a mass of ruins.

The Taos pueblo, in the northern part of the Territory, is one of the finest specimens of these ancient dwellings to be found in modern use. There are two houses on opposite sides of a small stream, between 300 and 400 feet long by about 150 feet wide, anciently connected by a bridge. They are five and six stories high, terraced from bottom to top, divided into numerous compartments, with entrance to each story, as above mentioned, by ladders giving access to trapdoors in the roof. With these ladders drawn up at night and a sentinel stationed upon the house top to give notice of approaching danger, the peaceful Pueblos could sleep in security though surrounded by the marauding hordes of bloodthirsty Apaches, Navajos, and Utes. In these buildings at Taos live about 800 men, women, and children like one family, and in apparently the greatest harmony, occupying the identical abodes used by their forefathers for generations prior to the birth of Columbus, or that of his royal patrons.

Following is an interesting article upon a strange race of people known as the "cliff dwellers," long since vanished, but enough traces are left to make scientists eager for further investigation of what was once the home of this now extinct people.

CLIFF DWELLERS.

Very important explorations have lately been made in the Santa Clara Canyon in regard to the famous cliff dwellers, which are visited every year by hundreds of people. This party of explorers measured the communal building of the ancient and abandoned cliff dwellers, and found it to be 300 by 400 feet, three stories high, and containing approximately 2,000 rooms. They excavated two rooms and found the walls in good state of preservation, with some evidence of building skill. They discovered considerable pottery, beautifully decorated with geometrical designs and partly glazed, something unusual, as the pottery heretofore found was generally unglazed. Many turkey bones gave evidence that the ancient occupants knew the good points of the national bird; the turkey corrals were found to be small, and connected with the living rooms by a low archway only high enough for a turkey to slip through. In the two rooms pipes of an unusual shape were found. One was in imitation of a prickly pear, and the other of a cactus. There were evidences that the cliff dwellers grew tobacco, and the charred corn found proves that they also grew corn. There was evidence that the building had been deserted in haste, and that the cliff dwellers had left nearly everything behind them. The most important discovery, however, was that of nine skeletons almost complete. The skulls show that the cliff dwellers were not Indians, but were allied to the Caucasian race. The back of the skull is flat, but the forehead is well developed. The chin is strong, and the appearance of the face must have been long, slim, and intellectual. They had beautiful teeth, but, strange to say, instead of incisors they had grinders, which, according to the theory of evolution, is proof that

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they were vegetarians for many ages before being driven out by invaders or by some calamity. One of the skulls had been pierced by an arrow on one side, while on the other it was fractured as if by a tomahawk. The man to whom it belonged had perhaps fallen while repelling an attack by the Indians. One femur measured 19½ inches, and the skeleton to which it belonged must have been between 7 and 8 feet high.

The burying places at Santa Clara have not been discovered yet, but it is known that the cliff dwellers were buried in a stooping position, with their heads between their knees and the feet pointing to a common center. Skulls were found with long red hair by this exploring party, and also monuments with inscriptions that resemble Chinese characters, while on the Gila River monuments were found that seemed to be of Egyptian origin. One well-known scientist in the party has made a study of the subject, and feels positive that the cliff dwellers belonged to another race than the Indian. It is believed that the cliff dwellings are from 1,500 to 2,000 years old, and that the Santa Clara settlement was abandoned on account of the eruptions of the crater, not far from here, which threw out the immense lava fields that cover large areas to the west of the city of Santa Fe. The relics found include instruments used for dressing hides; pottery, some of the pottery being very large; skeletons, and other remains of the cliff dwellers.

These discoveries prove that long before Columbus set foot on the shores of the New World, the valleys and plains of New Mexico were the seat of a civilization which has been the wonder of scientists and explorers; for ages unknown people contended for the possession of the lands and streams. Nation after nation of strange beings followed each other in conquest, and to-day, as above stated, evidences are to be found in the ancient settlements of their unknown inhabitants. The old pueblos in New Mexico are the homes of the descendants of the cliff dwellers, and the antiquarian will find enough of what is old beyond tradition, yet new to the nineteenth century, to keep him occupied for years in patient research. It is not necessary to go to Egypt or Persia to find ruins and relics of people who have passed from the face of the earth; they can be found right here in New Mexico and within easy reach of comfortable homes and hotels.

SOCIAL CONDITIONS.

The cities and towns of our Territory are filled with cultured, companionable people, ever ready to entertain and look out for the welfare of the stranger within its gates. The hotels are equal to any of the Eastern summer resorts, and life is as attractive here as anywhere else in the world. In most of the towns throughout New Mexico, a picturesque plaza forms the center of the town. In this plaza concerts are given regularly by the local bands of the town, which are enjoyed alike by the resident and the stranger.

MORAL CONDITIONS.

The material prosperity of the Territory of New Mexico is not more marked than is its moral advancement. The various fraternal societies are well represented, and there are a number of trade and labor unions.

The various church organizations are in charge of refined and cultured men and are well represented. The following-named churches

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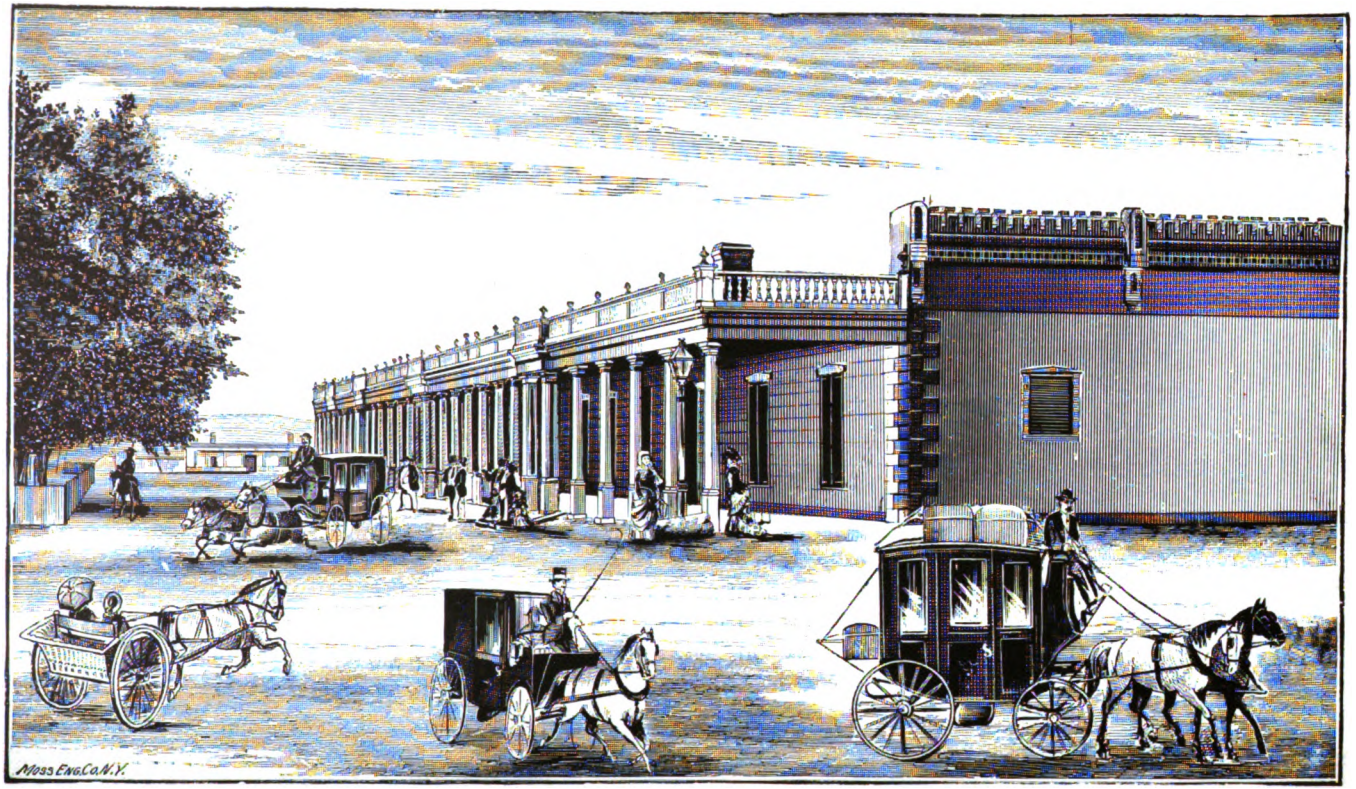

GOVERNOR'S OLD PALACE, SANTA FE.

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are all well attended throughout the Territory in every county and city: Catholic, Episcopal, Methodist Episcopal, Methodist Episcopal South, Presbyterian, Congregational, Christian, Baptist, Mormon, African Methodist, African Baptist, and others.

The fraternal societies in existence here are as follows: Masonic Knights Templar, Thirty-second Degree Scottish, Odd Fellows, Knights of Pythias, Ancient Order of United Workmen, Woodmen of the World, Elks, Red Men, Mystic Shriners, Junior Order of Mechanics, the different railroad organizations, and others.

We also have a large organization of the Grand Army of the Republic, with posts at different localities in the Territory. Their annual reunions are always looked forward to with great pleasure by the old soldier residents of our Territory.

THE VARIOUS CHURCHES.

Next to the schools, the American immigrant inquires concerning the church facilities. These, like the schools, are better in the towns than they are in the country; but this is also the case very largely in the States, and is necessarily so in all new sections. All the leading denominations are represented in the Territory, the towns being graced with handsome edifices, where attractive sermons are delivered by able and educated ministers, and where well-trained choirs add the pleasing enticement of music to the gospel's tender entreaties.

The Catholic Church, of course, first occupied the field in the Territory. The first Protestant church to enter the Territory was the Baptist. Rev. Samuel Gorman, of that church, in 1850 was the first Protestant missionary to the Pueblos, his labors being centered in Laguna. The Methodists were but one year behind their Baptist brethren. Following close upon the Methodists, the Presbyterians came to the Territory in 1851. The first Episcopal services in New Mexico were held at Santa Fe, in 1863. The first Congregational church in New Mexico was organized in 1881 at Albuquerque, and several other churches have since followed.

There are many of the Jewish faith in New Mexico, but, as far as the writer has been able to ascertain, they have organized congregations and regular worship only at Albuquerque and Las Vegas.

The colored people of the Territory generally belong to the African Methodist Church, of which denomination there are organized churches at Albuquerque, Las Vegas, and one or two more of the larger towns.

The Mormons have a few settlements in New Mexico, but these they have exclusively to themselves, and they are pretty generally on the northwestern borders of the Territory. There are Freethinkers, Unitarians, and Universalists scattered through the various towns, but none of these faiths have any organized societies.

"THE ADOBE PALACE."

The old residence of the governors-general under Spanish and Mexican rule, known as the "Palace," which for more than three hundred years has been the headquarters of the governors, captains-general, and chief executives of the Territory, province, or kingdom, is now in an admirable state of preservation, owing to the liberal appropriations made by the Government in the past. I regret to say, however, that unless the General Government continues to look after this historic old building, as it has in the past, it will soon go to ruin and decay.

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It is at present occupied in the west end by the post-office; in the center as the residence and office of the Territorial secretary, and in the east end by the governor for his office and the historical society of the Territory. This last institution has stored therein many rare and curious images and other works of prehistoric races found in the Territory, as well as ancient arms, armor, and articles of household use.

In an act passed by the last Congress, donating lands to the public schools and institutions of the Territory, approved June 21, 1898, by inadvertence a clause was inserted, being the last three lines of section 6 of the act, donating this historic old building to the Territory, as follows:

> The building known as the "Palace," in the city of Santa Fe, and all lands and appurtenances connected therewith and set apart and used therewith, are hereby granted to the Territory of New Mexico.

This clause does not meet with the approbation of our citizens, who believe that, so long, at least, as we are a Territory, this palace should remain under the fostering care and protection of the General Government.

The Territory is not financially able to take proper care of and preserve this building as should be done, as it requires all the revenue possible to maintain its own public buildings and institutions which are necessary to the proper conduct of its government. In addition, our people feel that the United States owning and caring for this building puts it in closer touch with all of our citizens, and accordingly I most earnestly recommend that such clause of section 6 of the act above referred to be repealed.

While the new capitol building, now nearing completion, will have offices for the governor and secretary, yet they are so distant from the business part of the city it will be inconvenient for these officers to use them except during the session of the legislature, which meets only once in two years and sits for sixty days, and during the remainder of the two years these officers should be in a more convenient locality, such as is afforded by the old "Palace," and it is only proper that the Government itself should furnish these officials with offices, the same as it does other United States officials.

The post-office is also located in this building, most conveniently for the accommodation of the public, and, of course, without any expense for rent.

The building is now badly in need of repair, and will of course suffer greatly on account of not getting the appropriation asked for last year by the Territorial secretary and custodian.

I trust that my recommendation will be carried out, and that the necessary appropriation will be made by Congress, as asked by the secretary, and attached hereto, in order that the necessary work be commenced at as early a day as possible.

In this connection, showing the historical association connected with this old building, I desire to quote from the report of my predecessor, Hon. L. Bradford Prince, made in 1890. The accuracy of the statements here made can not be doubted, as ex-Governor Prince has made a study of New Mexico and has written a history of the Territory which is recognized as an authority.

Ex-Governor Prince, in his report, says:

> Without disparaging the importance of any of the cherished historical localities of the East, it may be truthfully said that this ancient palace surpasses in historic interest and value any other place or object in the United States. It

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antedates the settlement of Jamestown by nine years and that of Plymouth by twenty-two, and has stood during the two hundred and ninety-two years since its erection not as a cold rock or monument, with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living center of everything of historic importance in the Southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a Territory, this has been his official residence.

From here Oñate started in 1599 on his adventurous expedition to the eastern plains; here, seven years later, 800 Indians came from far-off Quivira to ask aid in their war with the Axtaos; from here, in 1618, Vincente de Salivar set forth to the Moqui country, only to be turned back by rumors of the giants to be encountered; and from here Peñalosa and his brilliant troop started on the 6th of March, 1662, on their marvelous expedition to the Missouri; in one of its strong rooms the commissary-general of the Inquisition was imprisoned a few years later by the same Peñalosa; within its walls, fortified as for a siege, the bravest of the Spaniards were massed in the revolution of 1680; here, on the 19th of August of that year, was given the order to execute 47 Pueblo prisoners in the plaza which faces the building; here, but a day later, was the sad war council held which determined on the evacuation of the city; here was the scene of triumph of the Pueblo chieftains as they ordered the destruction of the Spanish archives and the church ornaments in one grand conflagration; here De Vargas, on September 14, 1692, after the eleven hours' combat of the preceding day, gave thanks to the Virgin Mary, to whose aid he attributed his triumphant capture of the city; here, more than a century later, on March 3, 1807, Lieutenant Pike was brought before Governor Alencaster as an invader of Spanish soil; here, in 1822, the Mexican standard, with its eagle and cactus, was raised in token that New Mexico was no longer a dependency of Spain; from here, on the 6th of August, 1837, Governor Perez started to subdue the insurrection in the north, only to return two days later and to meet his death on the 9th near Agua Fria; here, on the succeeding day, Jose Gonzales, a Pueblo Indian of Taos, was installed as governor of New Mexico, soon after to be executed by order of Armijo; here, in the principal reception room, on August 12, 1846, Captain Cooke, the American envoy, was received by Governor Armijo and sent back with a message of defiance; and here, five days later, General Kearny formally took possession of the city, and slept, after his long and weary march, on the carpeted earthen floor of the palace.

From every point of view it is the most important historical building in the country, and its ultimate use should be as the home of the wonderfully varied collections of antiquities which New Mexico will furnish.

Coming down to more modern times, it may be added that here General Lew. Wallace wrote Ben Hur, while governor, in 1879 and 1880.

TERRITORY OF NEW MEXICO,
OFFICE OF THE SECRETARY,
Santa Fe, October 3, 1898.

YOUR EXCELLENCY: I had the honor on the 10th day of September, 1897, to submit for your consideration and approval, to be forwarded to the honorable Secretary of the Interior, a statement of the then condition and needs of the "Adobe Palace" in this city.

In section 6 of an act of Congress approved June 21, 1898, the "Adobe Palace" and the grounds in connection therewith were ceded to the Territory of New Mexico. This historical building has often been brought to the attention of Congress in petitions for its preservation, and its transfer came as a surprise to the whole Territory. It is almost the last remaining link between the very earliest days of Spanish occupation, more than three hundred years ago, and the present.

The building is a mecca for all tourists to New Mexico and the Southwest, both native and foreign, and, as the former custodian, I have to report visitors almost every day in the past two years, sometimes numbering as many as a hundred at one time.

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The transfer of this building to the Territory, under the provisions of the act, means its early and sure destruction, for under the act any income derived from the building must go to the school fund, and the Territory could not and would not preserve it. Placed as it is upon the public plaza, as in Spanish and Mexican countries is always done, I feel confident there would be a constant struggle by individuals for occupancy of it, and there would be no income derived for the school fund.

Upon the request of very many of the most public-spirited, respectable, and intelligent of our citizens, within and without the city of Santa Fe, I would most earnestly urge the repeal of that portion of section 6 in the said act referring to the "Adobe Palace" in Santa Fe.

And in this connection it is proper to call attention to the estimates submitted in the year 1897 for the purpose of putting the "Adobe Palace" in complete and substantial repair, a copy of which is forwarded herewith. The need is greater to-day than two years ago.

I am, very respectfully, yours,

GEO. H. WALLACE,
Secretary of New Mexico and
former Custodian of the Adobe Palace.

Hon. MIGUEL. A. OTERO,
Governor of New Mexico, Santa Fe.

OFFICE OF THE SECRETARY AND CUSTODIAN
OF THE ADOBE PALACE,
Santa Fe, N. Mex., September 10, 1897.

Sir: In reply to your request for a statement as to the condition and needs of the Adobe Palace, I have the honor to submit the following:

The amount ($2,000) expended by my predecessor during the last fiscal year for new roof, repairs to post-office room, etc., left much to be done to place the building in thorough repair and preserve it from the weather. The wooden sidewalk is nearly worn out and must be replaced. It will be better for the building, and comply with the request of the city, if this should be made of cement with a stone curbing. About 150 feet of the portal is falling from decay, and must be replaced. This was not roofed last year for this reason: The ceilings of the entire building have been of canvas, but now that there is a steel roof, economy and health demand the substitution of plaster in place of the constantly falling cloth, so easily destroyed and calling for repair. The floors are scarcely any two on the same level, and, being of soft pine, are very much worn and in some places patched to the limit of possibility.

A thorough coat of paint, outside and in, and calcimining for the walls are badly needed, in addition to a plaster repair of the outside and inside walls.

The plumbing needs overhauling, and as the supply of water is now entirely from the city system, should be extended to the residence portion of the palace.

The following is submitted as an estimate of the amount necessary by the above conditions, and for the proper protection of the building, and to make it comfortable for occupancy:

Ceilings and floors	$2,000
Cement sidewalk	1,000
Painting and calcimining	500
Portal and roof	1,000
Plumbing	500
Incidental repairs	1,000
Total	6,000

Very obediently, yours.

GEO. H. WALLACE,
Secretary of New Mexico and Custodian of the Adobe Palace.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

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APPROPRIATIONS.

The salary of the governor is fixed by statute (May 1, 1876, R. S. U. S., sec. 1845) at $3,500 per annum, but for many years—indeed, since the act was passed—there has only been an appropriation to pay this salary of $2,600, and it has been determined in the Supreme Court of the United States, in a case taken from the Court of Claims, that the acceptance by the officer of the amount of the appropriation was a bar to his receiving anything more.

The same is true of the secretary of the Territory, his salary, as fixed by statute (same section), being $2,500 per annum, and the appropriation being $1,800.

While these amounts might have been sufficient at the time the act was passed, twenty-two years ago, the duties and responsibilities of both officers have increased to a wonderful extent by reason of the increase in population, the construction of railroads, and general business enterprises. The actual work occupies all the time during business hours, and constantly encroaches far into the night, besides necessitating frequent journeys from one part of the Territory to another on official business.

In addition, there is no provision of law for a private secretary or clerk to the governor, while his official correspondence alone is enormous, and he is obliged to employ a private secretary for only a part of the time, and settle for the same out of other resources, not being able to give constant employment, which should be done in the interest of public business.

The secretary of the Territory is allowed a clerk, with an appropriation of $1,200 per annum to pay the same. I would therefore recommend most strongly that the governor be allowed a clerk by the Government, at a salary of $1,200 per annum, and that an appropriation be made accordingly.

I would also earnestly recommend that the full compensation provided by law to the governor and secretary be included in an appropriation to that amount.

By the Territorial laws the governor is made ex officio a member of nearly all of the boards of regents and directors of the different Territorial institutions, and of necessity meets with them in different portions of the Territory when occasion presents. This of itself involves a considerable outlay of traveling expenses, for which the present appropriation of $500 is totally inadequate, as out of this amount has to be paid fuel, lights, stationery, telegrams, janitor service, office furnishings, etc., and, as the office is constantly running behind, I would recommend an increase for contingent expenses of the governor's office.

The five judges of the Territory of New Mexico, consisting of the chief justice of the supreme court, with four associate justices, are allowed $3,000 per annum only. The work is so heavy that they are actually holding either district or supreme court for the hearing and trial of cases eleven months in each year; and under our Territorial law the courts are open at all times for the transaction of any business not involving an actual trial by jury, so that the chambers work is very heavy. In the Indian Territory there are four judges, at an annual compensation of $5,000; Oklahoma has five judges, with a salary of $3,000 each. The population of New Mexico, while not as large, is nearly equal to that of the two above-named Territories, while its area is double that of the two Territories named.

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The compensation of these judges was also fixed on the 1st of May, 1876, when there were no railroads in the country, less than one-third of our present population, with no communication with the outside world except by wagon, and it is altogether too inadequate a compensation for the responsibility and labor involved.

I would therefore earnestly recommend that the compensation of each of the judges of the supreme court be increased to $5,000 per annum.

RAILROADS.

The railroad interests are a most important factor in the development of the resources of the Territory, and but few of the towns and villages are now without railroad and telegraphic communication.

There are at present 1,693 miles of railroad actually constructed within the Territory, owned and operated by eleven different corporations, as follows:

Atchison, Topeka and Santa Fe Railway Company.
Denver and Rio Grande Railroad Company.
Pecos Valley and Northeastern Railroad Company.
Santa Fe Pacific Railway Company.
Southern Pacific Railway Company.
El Paso and Northeastern Railroad Company.
Colorado and Southern Railroad Company.
New Mexico and Arizona Railroad Company.
Arizona and New Mexico Railroad Company.
Alamogordo and Sacramento Mountain Railroad Company.
Tierra Amarilla Southern Railroad Company.

Some of these companies operate wholly within the Territory, but a majority of them have only a portion of their mileage within the Territory.

The Atchison, Topeka and Santa Fe, one of the pioneer railway systems of the West, has by far the largest mileage, as it enters the north line of the Territory near the city of of Raton, passes through the entire Territory near the center, traversing the fertile valley of the Rio Grande, and passing out near the city of El Paso, Tex. Upon the main line of this road and its numerous branch lines are the three largest cities of the Territory—Las Vegas, Santa Fe, and Albuquerque—and also the cities of Raton, Springer, Los Lunas, Socorro, San Marcial, Las Cruces, Deming, and Silver City. This company alone has 692 miles of constructed track within the Territory,

The Denver and Rio Grande Railroad enters the Territory south of the town of Antonito, Colo., and passes through the Territory in a southerly direction to the city of Santa Fe, a distance of 114 miles. It also enters the Territory again west of the town of Antonito, and has 52 miles of track in the Territory upon the line from Antonito to Durango. This company, therefore, has 166 miles of its road within the Territory, and the city of Santa Fe and the towns of Espanola, Embudo, Tres Piedras, Chama, and Lumberton are upon this road.

The Pecos Valley and Northeastern Railroad Company have 192 miles of constructed road within the Territory. It traverses the fertile Pecos River Valley, passing the cities of Roswell and Carlsbad, and many other cities and towns on its line recently constructed to Amarilla, Tex.

The El Paso and Northeastern is a new road upon which work is still in progress. This company has a mileage of 152 miles within the Territory. Leaving the city of El Paso, Tex., it passes through Fort Bliss, Jarilla, Alamogordo, La Luz, Tularosa, and Three Rivers to its

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present terminus in the Salado coal fields at the town of Gray. This line of road passes through some of the best mining, timber, stock raising, and farming lands of the Territory.

The Santa Fe Pacific has a mileage of 157 miles within the Territory, from the city of Albuquerque to the city of Gallup, where the road enters the Territory of Arizona. The towns of Laguna, Grants, Bluewater, Wingate, Manuelito, and Gallup are situated along this portion of the road.

The Southern Pacific Railroad Company has about 166 miles of its tracks within this Territory. Entering the Territory from the east about 4 miles northwest of the city of El Paso, Tex., passing through a broad plain devoted mainly to the stock industry, it enters the Territory of Arizona near San Simon. The towns of Deming, Lordsburg, and Shakespeare are situated upon this road.

The Colorado and Southern Railroad Company has 76 miles of its tracks within the Territory, and crosses the extreme northeastern corner. The road passes through the town of Clayton, which is the county seat of Union County, and enters the State of Texas at the town of Texline. Stock raising is the most important industry along this portion of the road.

Passing again to the southwestern portion of the Territory, there is the New Mexico and Arizona Railroad Company, whose road runs from Deming, N. Mex., to Benson, Ariz., a distance of 176 miles. This company uses the track of the Southern Pacific from Deming to Lordsburg, so that but 25 miles of its own track is within this Territory.

The Arizona and New Mexico Railroad Company has constructed its road from Lordsburg to Clifton, Ariz., and 30 miles of this road is in New Mexico. The principal industry of this road is the transportation of ores, but it also does a general railroad business.

The Alamogordo and Sacramento Mountain Railroad Company has constructed 20 miles of their line, running from the town of Alamogordo to Cloudcroft, upon the summit of the Sacramento Mountains, during the past year. This road is used mainly for the transportation of timber to the mills of Alamogordo. This road will be extended to Penasco, a distance of 15 miles, during the present year.

The Tierra Amarilla Southern Railroad Company is a private road, owned by the Burns & Biggs Lumber Company. It runs from the town of Chama, Rio Arriba County, to the town of Brazos, in the same county, a distance of 17 miles.

NEW RAILROADS.

There have been 290 miles of new railroad constructed within the Territory during the past year by the following companies:

	Miles.
El Paso and Northeastern	152
Pecos Valley and Northeastern	100
Alamogordo and Sacramento Mountain	20
Atchison, Topeka and Santa Fe	18

but this new mileage is included in the above total.

PROJECTED RAILROADS.

It seems altogether probable that a new railroad will be constructed at a very early day from the city of Las Vegas through the Mora Valley to the town of Taos, a distance of 100 miles. A company has been

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incorporated for the purpose of constructing this road. The line has been surveyed, and some preliminary work has been done upon the road. If constructed, it will open up a most fertile portion of the Territory, as well as large mining and timber industries.

A new railroad is also projected from Albany, Tex., through the city of Las Vegas and on to the Northwest, but of its construction little can be said at this time, as the project has not taken definite shape, so far as I am advised.

A railroad company has also been organized for the purpose of constructing a new railroad from the city of Durango, in the State of Colorado, through San Juan County, N. Mex., to the city of Albuquerque or Gallup, but while I am of the opinion that it is only a question of time when such road will be constructed, I can only refer to it as a projected road because of the meager information now at hand.

RECAPITULATION.

Railroads now constructed.

	Miles.
Atchison, Topeka and Santa Fe Railway Company	692
Pecos Valley and Northeastern Railroad Company	192
Denver and Rio Grande Railroad Company	166
Southern Pacific Railroad Company	166
El Paso and Northeastern Railroad Company	152
Santa Fe Pacific Railroad Company	157
New Mexico and Arizona Railroad Company	25
Arizona and New Mexico Railroad Company	30
Alamogordo and Sacramento Mountain Railroad Company	20
Colorado and Southern Railroad Company	76
Tierra Amarilla Southern Railroad Company	17

New mileage constructed within a year, 290.
Railroad companies operating in the Territory, 11.

Elevations on line of Atchison, Topeka and Santa Fe Railway in New Mexico.

Station name.	Elevation.	Station name.	Elevation.
	Feet.		*Feet.*
North Portal Tunnel	7,548.00	Levy	6,223.00
Lynn	7,525.00	Bond	6,203.00
Raton	6,597.00	Shoemaker	6,229.00
Otero	6,357.00	Kroenig	6,549.00
Dorsey	6,042.00	Azul	6,650.00
Maxwell City	5,864.00	Las Vegas	6,358.50
Toril	5,884.00	Blackwell	6,257.00
Rayado	5,947.00	Chapelle	6,043.00
Nolan	6,042.00	Ribera	5,906.50
Wagonmound	6,153.00	Fulton	6,502.00
Tipton	6,340.00	Rowe	6,781.00
Watrous	6,370.00	Fox	7,126.00
Onava	6,705.00	Canoncito	6,833.00
Arriba	6,451.00	Twichell	6,311.00
Romero	6,262.50	Ortiz	5,796.00
Sulsbacher	5,955.00	Waldo	5,591.00
Blanchard	6,357.00	Thornton	5,224.00
Sands	6,296.00	Elota	5,098.80
Gise	6,763.00	Bernalillo	5,009.00
Pecos	7,028.04	Albuquerque	4,910.00
Glorieta	7,415.00	Barr	4,869.00
Lamy	6,447.00	Los Lunas	4,809.00
Galisteo	6,000.00	Sabinal	4,720.00
Los Cerrillos	5,647.65	Alimillo	4,613.00
Rosario	5,383.00	Socorro	5,550.00
South Portal Tunnel	7,584.00	Arny	4,466.00
Hillside	7,028.00	Pope	4,530.00
Dillon	6,435.00	Crocker	4,688.50
Hebron	6,136.00	Cudder	4,664.00
Schomburg	5,951.00	Upham	4,516.38
Dover	5,796.00	Rincon	4,021.00
Springer	5,745.00	Tonuco	4,220.00
Colmor	5,901.00	Leasburg	3,918.00

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Elevations on line of Atchison, Topeka and Santa Fe Railway in New Mexico—Continued.

Station name.	Elevation.	Station name.	Elevation.
	Feet.		*Feet.*
Lascruces	3,850.00	San Marcial	4,418.00
Mesquite	3,795.00	Lava	4,685.00
Berino	3,762.00	Engle	4,728.00
Deming	4,477.70	Aleman	4,622.00
Magdalena	6,609.00	Grama	4,306.00
Santa Rita	6,460.00	Detroit	4,016.40
Lake Valley	5,115.00	Selden	3,927.00
Blossburg	6,760.00	Dona Ana	3,879.00
Algodones	5,065.00	Mesilla Park	3,837.00
Alamedo	4,957.00	Earlham	3,781.00
Abajo	4,898.00	Anthony	3,753.12
Isleta	4,856.00	Silver City	6,000.00
Belen	4,762.00	Whitewater	5,295.00
Lajoya	4,666.00	Nutt	4,759.00
Lemitar	4,584.00	Santa Fe	6,919.00
San Antonio	4,500.00	Las Vegas Hotsprings	6,611.00

REPORT OF COMMISSION OF IRRIGATION AND WATER RIGHTS.

I beg to submit herewith report made to me by the above-named commission during the last legislative assembly, held in Santa Fe, N. Mex., on January 16, 1899, which is as follows:

The undersigned, constituting the commission of irrigation and water rights in the Territory of New Mexico, appointed pursuant to the act of the legislative assembly approved March 18, 1897, respectfully submit the following report:

The law under which the commission was appointed is the following:

"AN ACT creating a commission of irrigation and water rights. C. B. 127; approved March 18, 1897.

"*Be it enacted by the thirty-second legislative assembly of the Territory of New Mexico:*

"SEC. 1. A commission is hereby created to consist of the president of the council and the speaker of the house of representatives of the thirty-second legislative assembly of the Territory of New Mexico, three resident citizens of this Territory to be selected by said president and speaker jointly, which commission is hereby directed to inquire into the conditions existing in different portions of the Territory with reference to irrigation and water rights, to examine the laws upon this subject in force in this Territory and in other States and countries, and to recommend to the next legislative assembly such legislation as in the opinion of said commission shall meet all requirements on this subject.

"The members of the said commission shall meet within sixty days after the adjournment of the thirty-second legislative assembly at such place as they may agree upon and organize by the election of a president and secretary from among their number.

"It shall be the duty of such commission to embody in a report to the governor of the Territory all possible information concerning the subject of irrigation and water supply, the amount of land in the Territory cultivated by the means of irrigation, the extent of the present and proposed systems of storage reservoirs, and such other facts as they may deem proper and useful, which report shall be published at least twenty days before the beginning of the next session of the legislature.

"SEC. 2. The members of the commission hereby created shall serve without pay or compensation, but their expenses while actually engaged in the performance of the duties prescribed by this act shall be paid by the Territorial treasurer out of any available funds in his hands, and the Territorial auditor is hereby authorized and directed to draw his warrant upon the treasurer for such expenses upon certificates signed by the president and secretary of such commission.

"SEC. 3. This act shall take effect and be in force from and after its passage."

The members of the commission met at Santa Fe within the time prescribed by said act, and organized by electing Anthony Joseph president and Joseph E. Saint secretary. Meetings were subsequently held at Albuquerque on the 9th of October, 1898, and the 26th of October, 1898.

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At the first of these meetings plans were adopted for carrying on the work devolving upon the commission, receiving reports of subcommittees and of the different members touching special matters referred to them, and at the latter meetings the material for the final report was fully considered and the text of the report formulated.

After dividing up the work of gathering information among the several members of the commission in the first instance, it was found that the examination of existing conditions in the Territory and the accumulation of the facts relating thereto would require an amount of work and a degree of technical knowledge which none of the members could furnish. After a careful consideration, and after consultation with the governor and obtaining his approval, we employed Mr. P. E. Harroun, an accomplished civil and hydraulic engineer, for a limited time, to make such investigation and report as was deemed necessary to enable us to comply with the law.

The investigations made by the several members of the commission, and the facts set forth in Mr. Harroun's report, have convinced us that the greatest need of New Mexico upon the subject of irrigation and water rights at the present time is not new legislation, but accurate information. Acting, as we have done, without compensation, it was not practicable for the members of the commission to devote any considerable time to the gathering of facts of the kind desired. These are only to be obtained by actual observation in the field, and to be of real service this can only be done by a trained observer, familiar with the approved scientific methods of studying such a subject. The data bearing upon the flow of water in streams, variable as are those of New Mexico with the time of the year, the drainage area of localities favorable for the collection of surface and torrential waters for storage, and the quantities of land susceptible of reclamation by storage or additional irrigation by improved methods, can for the most part only be collected for practical use by systematic observation and record of facts, often extending through months and years. The facts presented in this report are, as to a large part of the Territory, necessarily general, and not based upon the systematic study above alluded to. In the northeastern and southeastern parts of the Territory, where the Maxwell and Pecos companies, respectively, have constructed extensive irrigation systems on a large scale and according to modern scientific methods, it is possible to secure reliable and instructive data. In the greater part of the Territory, however, the lack of detailed observation and systematic record prevents anything more than a fair general statement of conditions and results at the present time. No work of this kind has ever been done by the Territory. The small amount of it that has been done by the Government has been confined to the Rio Grande Valley.

While, therefore, the members of the commission feel that they have accomplished about as much as was reasonably practicable under the circumstances, they regard their report as suggestive of what might be done by a better organized effort, rather than as of any great permanent value in itself.

There are certain matters now requiring attention, of vast importance as regards the future of the Territory, which seem to us to imperatively call for further and more complete investigation in the line of the work intrusted to us:

First. The selection of lands donated by Congress to New Mexico in aid of irrigation and the reclamation of arid lands, and for the maintenance of educational and other institutions.

The law making this donation, enacted June 21, 1898, is as follows:

"AN ACT to make certain grants of land to the Territory of New Mexico, and for other purposes.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That sections numbered sixteen and twenty-six in every township of the Territory of New Mexico, and where such sections, or any parts thereof, are mineral or have been sold or otherwise disposed of by or under the authority of any act of Congress, other nonmineral lands equivalent thereto, in legal subdivisions of not less than one quarter section, and as contiguous as may be to the section in lieu of which the same is taken, are hereby granted to said Territory for the support of common schools, such indemnity lands to be selected within said Territory in such manner as is hereinafter provided: *Provided*, That the sixteenth and thirty-sixth sections embraced in permanent reservations for national purposes shall not at any time be subject to the grants of this act, nor shall any land embraced in Indian, military, or other reservations of any character be subject to the grants of this act; but such reservations shall be subject to the indemity provisions of this act.

"SEC. 2. That fifty sections of the unappropriated nonmineral lands within said Territory, to be selected and located in legal subdivisions as hereinafter pro-

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vided in this act, shall be, and are hereby, granted to said Territory for the purpose of erecting public buildings at the capital of the State of New Mexico when said Territory shall become a State, and be admitted into the Union, when said capital shall be permanently located by the people of New Mexico for legislative, executive, and judicial purposes.

"SEC. 3. That lands to the extent of two townships in quantity, authorized by the sixth section of the act of July twenty-second, eighteen hundred and fifty-four, to be reserved for the establishment of a university in New Mexico, are hereby granted to the Territory of New Mexico for university purposes, to be held and used in accordance with the provisions in this section; and any portions of said lands that may not have been heretofore selected by said Territory may be selected now by said Territory. That in addition to the above, sixty-five thousand acres of nonmineral, unappropriated, and unoccupied public land, to be selected and located as hereinafter provided, together with all saline lands in said Territory, are hereby granted to the said Territory for the use of said university, and one hundred thousand acres to be in like manner selected, for the use of an agricultural college. That the proceeds of the sale of said lands, or any portion thereof, shall constitute permanent funds, to be safely invested, and the income thereof to be used exclusively for the purposes of such university and agricultural college, respectively.

"SEC. 4. That five per centum of the proceeds of the sales of public lands lying within said Territory which shall be sold by the United States subsequent to the passage of this act, after deducting all expenses incident to the same, shall be paid to the said Territory, to be used as a permanent fund, the interest of which only shall be expended for the support of the common schools within said Territory.

"SEC. 5. That the schools, colleges, and university provided for in this act shall forever remain under the exclusive control of said Territory, and no part of the proceeds arising from the sale or disposal of any lands herein granted for educational purposes, or of the income thereof, shall be used for the support of any sectarian or denominational school, college, or university.

"SEC. 6. That in lieu of the grant of land for purposes of internal improvement, made to new States by the eighth section of the act of September fourth, eighteen hundred and forty-one, which section is hereby repealed as to New Mexico, and in lieu of any claim or demand of the State of New Mexico under the act of September twenty-eighth, eighteen hundred and fifty, and section two thousand four hundred and twenty-nine of the Revised Statutes, making a grant of swamp and overflowed lands, which grant it is hereby declared is not extended to said State of New Mexico, the following grants of nonmineral and unappropriated land are hereby made to said Territory for the purposes indicated, namely:

"For the establishment of permanent water reservoirs for irrigating purposes, five hundred thousand acres; for the improvement of the Rio Grande in New Mexico, and the increasing of the surface flow of the water in the bed of said river, one hundred thousand acres; for the establishment and maintenance of an asylum for the insane, fifty thousand acres; for the establishment and maintenance of a school of mines, fifty thousand acres; for the establishment and maintenance of an asylum for the deaf and dumb, fifty thousand acres; for the establishment and maintenance of a reform school, fifty thousand acres; for the establishment and maintenance of normal schools, one hundred thousand acres; for the establishment and maintenance of an institution for the blind, fifty thousand acres; for a miner's hospital for disabled miners, fifty thousand acres; for the establishment and maintenance of a military institute, fifty thousand acres; for the enlargement and maintenance of the Territorial penitentiary, fifty thousand acres. The building known as the Palace, in the city of Santa Fe, and all lands and appurtenances connected therewith and set apart and used therewith, are hereby granted to the Territory of New Mexico.

"SEC. 7. That this act is intended only as a partial grant of the lands to which said Territory may be entitled upon its admission into the Union as a State, reserving the question as to the total amount of lands to be granted to said Territory until the admission of said Territory as a State shall be determined on by Congress.

"SEC. 8. That all grants of land made in quantity or as indemnity by this act shall be selected by the governor of the Territory of New Mexico, the surveyor-general of the Territory of New Mexico, and the solicitor-general of said Territory, acting as a commission, under the direction of the Secretary of the Interior from the unappropriated public lands of the United States within the limits of the said Territory of New Mexico.

"SEC. 9. That said commission shall proceed, upon the passage of this act, to

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select said lands, for each purpose as hereinbefore designated, in legal subdivisions, of not less than one quarter section, and shall report to the Secretary of the Interior such selections, designating in such report the purpose for which such bodies of land as selected are to be respectively used as provided above in this act.

"SEC. 10. That the lands reserved for university purposes, including all saline lands, and sections sixteen and thirty-six reserved for public schools, may be leased under such laws and regulations as may be hereafter prescribed by the legislative assembly of said Territory; but until the meeting of the next legislature of said Territory, the governor, secretary of the Territory, and the solicitor-general shall constitute a board for the leasing of said lands: and all necessary expenses and costs incurred in the leasing, management, and protection of said lands and leases may be paid out of the proceeds derived from such leases. And it shall be unlawful to cut, remove, or appropriate in any way any timber growing upon the lands leased under the provisions of this act, and not more than one section of land shall be leased to any one person, corporation, or association of persons, and no lease shall be made for a longer period than five years, and all leases shall terminate on the admission of said Territory as a State; and all money received on account of such leases in excess of actual expenses necessarily incurred in connection with the execution thereof, shall be placed to the credit of separate funds for the use of said institutions, and shall be paid out only as directed by the legislative assembly of said Territory, and for the purpose indicated herein. The remainder of the lands granted by this act, except those lands which may be leased only as above provided, may be sold under such laws and regulations as may be hereafter prescribed by the legislative assembly of said Territory; and all such necessary costs and expenses as may be incurred in the management, protection, and sale of said lands may be paid out of the proceeds derived from such sales; and not more than one quarter section of land shall be sold to any one person, corporation, or association of persons, and no sale of said lands or any portion thereof shall be made for less than one dollar and twenty-five cents per acre; and all money received on account of such sales, after deducting the actual expenses necessarily incurred in connection with the execution thereof, shall be placed to the credit of separate funds created for the respective purposes named in this act, and shall be used only as the legislative assembly of said Territory may direct, and only for the use of the institutions or purposes for which the respective grants of lands are made: *Provided*, That such legislative assembly may provide for leasing all or any part of the lands granted in this act on the same terms and under the same limitations prescribed above as to the lands that may be leased only, but all leases made under the provisions of this act shall be subject to the approval of the Secretary of the Interior, and all investments made or securities purchased with the proceeds of sales or leases of lands provided for by this act shall be subject to like approval by the Secretary of the Interior.

"SEC. 11. That there is hereby appropriated from the unexpended funds in the Treasury of the United States, ten thousand dollars, or so much thereof as may be necessary, to be expended under the direction of the Secretary of the Interior, for the purpose of paying the expenses of the selection and segregation of said respective bodies of land, including such compensation as the Secretary of the Interior may deem proper.

"SEC. 12. That all acts and parts of acts in conflict with the provisions of this act, whether passed by the legislative assembly of said Territory or by Congress, are hereby repealed."

It will be apparent to everyone acquainted with the conditions existing in New Mexico, that the location and selection of these lands is going to be a matter of enormous importance, and that it will depend solely upon an intelligent selection whether they shall ultimately become saleable or productive of income by way of rental so as to accomplish the purposes for which the law is designed. There are large quantities of public land in the Territory which never will become saleable at the price fixed by the law, and which could not be leased for any appreciable interest on that price, especially with the restriction as to quantity of land to be leased or sold to any one person. On the other hand, there are many localities where lands will ultimately attain the maximum value of farming lands by reason of their proximity to eligible sites for future water storage and irrigation systems. To be of permanent value, a large part of the donated land ought to be selected with reference to their future reclamation in this way. For such selections there is at the present time no reliable guide. The information in possession of the United States surveyor-general would not suffice for this purpose. Nothing short of an examination by competent hydraulic engineers would furnish the facts which are absolutely essential.

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Second. The injury to the people of New Mexico by the increased and constantly increasing appropriation of water from the head tributaries of the Rio Grande in Colorado.

Sooner or later this is bound to become an interstate question, and in order that the interests of New Mexico shall be properly guarded it will be essential that her representatives be armed with absolute and accurate information touching the flow of water in the Rio Grande and its tributaries, covering not only present conditions, but an accumulation of statistics as to the past. Colorado, with its well-organized and liberally supported State engineering department, has a great advantage over us in this respect. Nothing short of a systematic study of these matters, continued through several years, will be adequate to enable us to meet this question when it comes to an issue.

Third. Possible future legislation.

The interests of irrigation are not uniform throughout the Territory on account of the wide differences in latitude, elevation, and character of productions. This is why, as we show further on, any attempt at legislation beyond the general principles already well established is not advisable at the present time. It is impossible, with the information now in hand, to determine beforehand whether any given scheme of legislation desired by and applicable to one part of the Territory may not be the cause of great injury and injustice to another. To enable future legislators to exercise their proper and only legitimate function, viz, that of enacting laws for the benefit of the whole people, the information which might be accumulated by further systematic investigation of these water questions will be absolutely necessary.

One of the duties imposed upon the commission by the act creating the same was the examination into the laws with reference to irrigation and water rights in force in New Mexico, and in other states and countries, and to recommend such legislation as, in the opinion of the commission, will meet all requirements of this subject.

Serious attention has been given to this branch of their duties by the members of the commission, who have brought to their aid the experience and advice of many of the prominent citizens of the Territory and elsewhere, deeply interested in the study and possibility of irrigation. One of the most serious impressions resulting from a study of this branch of the commission's labors is that great embarrassments or losses will almost inevitably occur in making any change that trespasses upon the general system of laws now in force; a very large part of our people, thoroughly understanding the rights which they now have in and to waters beneficially used by them, are strongly distrustful of any proposed change thereof, the demonstration of the result of which they have not seen in practical working. There is a widespread and largely justifiable impression prevailing that the result of changing the present irrigation laws of the Territory in any essential respect would be to disturb vested rights, and to unsettle public confidence in legal rights which have long been owned and beneficially used in the great portion of the waters of our streams. For this reason it was determined by the commission, after thoroughly canvassing the subject at its first meeting, that any and all recommendations from the commission along this line should be of the most conservative character, and that, before any change in the laws was recommended, there should be a close study of the laws and methods of enforcing them as now existing, and unless it was apparent that changes could be recommended which would be of considerable advantage to the public at large, it would be better to recommend that no changes whatever be made. With this spirit the commission, through its committees, entered into the task of the analysis of the present laws of the Territory. These were found to consist of certain Territorial statutes, of several acts of Congress, and of principles announced by the supreme court of the Territory independent of statute.

The first statutory law we have on the subject is the provision of the Kearny Code of 1846, to the effect that all laws in force at the time of the promulgation thereof, concerning water courses, should continue in force. Kearny Code, September 22, 1846, Tit. Water Courses. Sec. 1. (Compiled Laws, 1897, page 89.)

This reference was, undoubtedly, to the Spanish-Mexican laws then in force with reference to the control of water; and, while the commission has not seen fit to go into a special study of the laws thus referred to, it is believed that such reference thereto was intended to apply to the system of community ditch laws, which at that time regulated the rights of the owners thereunder in this Territory, in common with the great body of Mexican possessions in the arid section, and that, at such time, almost all rights claimed by the citizens of New Mexico in the waters of any of its streams were by virtue of such community laws, and that the individual rights of private owners of ditches had not at that time assumed such value as to attract the necessity of legislation to protect the same.

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The assumption that the language referred to in the Kearny Code was directed particularly to rights owned under the community system, received additional strength from the fact that the legislative assembly of 1851 and 1852, following close upon the promulgation of the Kearny Code, adopted a set of laws with reference to the community ditch system, which laws were largely the crystallization into statutes of the principles theretofore governing such questions, and the customs arising thereunder. Act of July 20, 1851, page 189. Act of January 7, 1852, page 276. (Compiled Laws, 1865, chap. 1, secs, 1–8. Id. secs., 9–26.)

It is to the Spanish-Mexican laws, therefore, and to legislative enactments beginning in 1851, continuing more or less to the present time, that we owe the present acequia laws of the Territory. The continuance of this system, admirably adapted to the necessities of the people living in the most thickly inhabited parts of the Territory, has been productive of good results where the spirit of the law has been enforced.

Amendments to the laws of 1851 and 1852 were enacted in 1861, regulating the working on public acequias. Act of January 29, 1861. (Compiled Laws, 1865, secs. 27–32.) Also, in 1863, regulating the control of ditches by overseers. Act of January 28, 1863. (Compiled Laws, 1865, secs. 33–39.) Also, in 1866, regulating the repair and relocation of ditches when injured or destroyed by floods. Act of January 18, 1866, pages 90–96. (Compiled Laws, 1897, chap. 1, secs. 25–30.)

In 1874 the legislature extended the right to all persons to construct private acequias and take water therefor from any available source, with a provision for compensation of the owners of the land through which the necessary ditches were constructed; and simple and inexpensive methods were prescribed by which such terms should be assessed and such rights recognized. Act of January 9, 1874, page 28. (Compiled Laws, 1897, chap. 1, secs. 23, 24.)

On February 24, 1887, an act was passed, applicable only to corporations, providing for the organization of such for the purpose of constructing and maintaining reservoirs, canals or ditches, and pipe lines, in order to supply water for irrigation, mining, manufacturing, domestic and other public uses, including cities and towns, and for the purpose of colonization and improvement of lands in connection therewith. This act gave full authority to corporations formed thereunder to acquire water and water rights, either by purchase or condemnation, and to construct ditches, canals, and reservoirs to be used in connection therewith. Laws of 1887, chap. 12, page 29. (Compiled Laws, 1897, chap. 1, secs. 468–493.)

On February 20, 1889, an act was also passed providing that incorporated towns and villages exceeding in population 3,000 persons should have certain priority for the use of water in streams upon or near which they are situated. Laws of 1889, chap. 70, page 150.

On February 26, 1891, another act was passed providing a method by which a record of the subsequent construction or enlargement of any ditch, canal, or feeder for a reservoir taking water from a natural stream should be made, and by which legal appropriation of water should be made, and defining in some particulars the essentials of such legal appropriation. Laws of 1891, chap. 71, page 130. (Compiled Laws of 1897, secs. 493, 494.)

These acts are the only ones announcing any principles adopted by the Territory for the determination of rights respecting water, and, together with two or three minor acts authorizing various counties to assist in irrigation enterprises, and the act of February 13, 1893, exempting all irrigation ditches, canals, and reservoirs from taxes for a period of six years after the commencement thereof, they form the body of Territorial enactments on the subject of water rights.

It will thus be seen that, while our statutory laws on this subject are fragmentary, there is no contradiction or unprogressive feature incorporated in any of the same. On the other hand, they have been found to be simple, in the main logical, and in view of the conditions, both of land and people, have been proved to be beneficial in their workings to the great body of the people. An analysis of these laws shows that they provide for and protect the Spanish-Mexican theory, under which, as stated above, good results have been obtained, and that they also protect and encourage individual enterprises; and that the principles of such laws, as reenforced by the interpretation of the courts, protect each system from any trespass whatever upon the other.

As the ideal of beneficial legislation is the least possible regulation necessary with reference to a given subject, it would appear that our legislators in the past have most promoted the irrigation interests and the development of the Territory by their remarkable conservatism in legislating upon this subject. Few laws have been deemed necessary other than the community system of laws above mentioned, and these have, as above stated, been enacted. The principles of these

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laws are easily construed by the courts, and very little difficulty is found in following and putting them into effect. There is no subject with reference to which the laws of the Territory (both the community and private water appropriations) are better understood by the people, or with reference to which principles are more definitely established. We are very largely indebted for this, not only to the above legislation and the decisions of our own courts, but to the decisions of all the courts in the arid States and Territories, in all of which the right to appropriation of surplus waters of all streams is recognized and upheld, qualified only by the doctrine that priority in time gives priority of right; that rights claimed must be perfected with due energy; that the appropriation must be made for beneficial purposes, and is limited to the amount needed for such purposes.

While the legislation of the various States and Territories varies considerably, yet it is believed that all of them recognize this doctrine as above defined. In several of the States and Territories it was early contended that the acts of the citizens thus taking possession of and diverting the water from the streams thereof were contrary to the principles of the common law, which recognizes the rights of riparian owners along such streams; and because of this belief and the confusion into which some of the courts fell in interpreting the rights thus claimed, as well as because of the fact that the rights claimed by different appropriators were found, in many instances, to trespass upon each other, a great amount of litigation, in which the doctrine of the right of appropriation has been involved, has arisen all over the West. Through this litigation it is believed that all questions capable of giving rise to embarrassing disputes concerning the uses of water have practically been settled and adjusted, and the public made familiar therewith. There is a great unanimity of decisions in establishing such principles, and where there is any serious variance it has been caused by local statutes. Indeed, so common was the acquiescence of the public in the rights and principles which governed the appropriation of water, that early in the history of the arid West the Congress of the United States recognized such rights by the law now embraced in sections 2339 and 2340 of the Revised Statutes thereof, which read as follows:

"SEC. 2339. Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the rights of way for the construction of ditches and canals for the purposes herein specified, is acknowledged and confirmed.

"SEC. 2340. All patents granted or preemption or homesteads allowed shall be subject to any vested and accrued water rights or rights to ditches and reservoirs used in connection with such water rights as may have been acquired under or recognized by the preceding section."

These enactments of Congress have been repeatedly construed by the Supreme Court of the United States, and the opinions contained in such decisions and the announcement thereof, have been a material assistance to all of the States and Territories affected thereby, and have greatly promoted the unanimity of judicial decisions referred to above.

It is therefore apparent, that though, as above stated, legislative enactments of this Territory with reference to this subject are fragmentary, yet, in view of the settled customs prevailing all over the arid West and of the enactments of Congress above referred to, additional legislation has not been and is not now essential in this Territory, to fully guarantee to the people the full and beneficial enjoyments of rights which they have always claimed and now possess. Neither is it believed that any of the statutory enactments have incorporated in the body thereof any vicious principles which might operate to impair the interest of irrigation in the Territory. The result of the laws providing for such systems so enforced in New Mexico with reference to the creation of litigation arising therefrom is the best evidence of the wisdom of that system; and while there have been from time to time some complaints of irregular diversion of water at the expense of proprietors below yet the least number of cases have ever gone beyond the trial court, and comparatively few have been commenced even; such as have arisen have been settled in the main speedily and without hardship to those having the better right to such waters.

One result of our system of laws on this subject is, that when such a case arises, our courts, not being hampered with conflicting and untried provisions, as some other courts of our Western States and Territories, have the great body of principles, as decided by other courts of last resort, to draw from in the adjustment of their decisions along the line of equity and good sense, and the widest possible latitude in putting their decisions into effect.

A notable case has recently been tried in one of the southern counties of the

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Territory, involving the most complicated issues and a vast number of litigants, having some 30 or 40 parties thereto, and involving as many claims of priority for different appropriations; after the evidence had been taken, the district court (under our laws as they now stand) found no difficulty whatever in adjusting the priorities of all of these parties, and in providing by its decree a method for the distribution among all of those found to have rights thereto the insufficient supply of water over which they were litigating. This was a celebrated case, and was watched with great interest by the public; and it is believed that the result thereof brought peace to the whole community and established firmly the rights of each claimant, protecting the same as against the trespass of any other claimant, and providing a method for the distribution of the waters in such manner as could hardly have been reached under any system of legislative enactment in any of the Western States or Territories. It was a satisfactory demonstration of the wisdom of the present status of the development of our Territory, simply announcing by legislative enactment the general principles, and leaving our courts to enforce the same by jurisdictional methods, as may be deemed equitable in each particular case.

The commission has not been unmindful of that part of the act creating the same, wherein it was directed to examine the laws of other States and countries, in determining what legislation should be recommended to the legislative assembly, and has made such study thereof as it was possible for it to make without going to the places where such laws were in effect. The legislation of such States and Territories has been carefully read, as have the decisions of the courts based thereupon; much that is admirable has been found to be incorporated in the legislation of nearly every State, along with much which it would have been best to have omitted, and in some instances it has resulted in great confusion of principles. The system adopted in each State has been found to be the result of the needs of that particular jurisdiction, and the conditions are more or less different in each State from those that obtain in any other State.

Much of this great system of laws would no doubt be of great benefit if the conditions to which the same is intended to be applied existed in our Territory, but in the opinion of the commission they would be valueless, if ingrafted into the law here, from the fact that the conditions, both as to soil, climate, water, and the disposition of the people are entirely different from those of the localities where such laws are enforced; indeed it is the varying conditions of nearly every section of this Territory, as to these essentials, which renders the work of your commission in determining what laws should be made applicable, a difficult one. General principles, of course, can be made to apply all over the Territory, but when it comes to the regulation of water rights and the rights upon which irrigation is dependent in detail, those which would be highly beneficial in one section of our Territory, would doubtless be found detrimental to other sections thereof, dependent upon altitude, climate, different character of the soil, and the necessities of the people.

After the fullest consideration which the commission has been able to make of the laws of our Territory, and those of the various Western States and Territories, it is our deliberate and unanimous conclusion, that the principles governing the law of water and the rights connected therewith in force in this Territory are sufficiently just, progressive, and simple, and that the courts have sufficient jurisdiction and authority at present to fully determine and enforce the same with justice to all, and that no change of any of the principles so enforced would be advisable; and it therefore recommends that no legislation with reference to any of such principles is at present advisable.

EXPENSES OF THE COMMISSION.

The following table shows the total expenses incurred by the commission:

To P. E. Harroun, engineer for commission, four and one-third months, at $200 per month	$866.66	
To P. E. Harroun, expenses while in employ of commission	102.90	
		$969.56
To expenses of members attending the various meetings of commission:		
George Curry	47.00	
George Curry	41.00	
Antonio Joseph	54.00	
J. E. Saint	20.30	
Frank Springer	6.50	
(W. A. Hawkins made no claim.)		
		168.80

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Printing and stationery:		
Daily Citizen	$6.00	
Daily Citizen	3.00	
Democrat Publishing Company	9.00	
Democrat Publishing Company	6.00	
O. A. Matson & Co. (letter book)	1.00	
		$25.00
Typewriting for commission:		
Clara H. Olseun	19.35	
Clara H. Olseun	1.40	
R. L. Hunt	50.00	
		70.75
Total expenses of commission		1,234.11

No salary or compensation of any kind to members or officers of the commission is included, and, as will be seen by consulting the items, but a very small amount was incurred for personal expenses of members in attending the meetings. The principal expense is for the employment of the engineer. Of the foregoing expenses only the sum of $360.55 has been paid. By correspondence with the Territorial auditor it was developed that he was not satisfied as to his authority to draw warrants for the payment of the whole of the expenses of the commission. We recommend that an appropriation be made by the legislature to meet these bills.

By the foregoing statement of expenses it will be seen that work of the character already done and herein indicated as desirable for the future can be carried on with considerable economy. The total expenses so far incurred, including the employment of an engineer, is only $1,234.11.

We suggest that the work which we have recommended might be advantageously continued under the auspices of a commission something like the present one, consisting of men representing the different sections of the Territory, not confined to any political party, and serving without pay. Such commission to be authorized to employ a competent hydraulic engineer to make annual investigations, and reports to be submitted to each succeeding legislature. The expenses to be incurred by the commission to be limited to a definite amount and fixed by appropriation. In this way, at a comparatively small expenditure, a series of reports would be produced which would be of permanent value to the Territory.

Dated December 15, 1898.

Respectfully submitted.

ANTONIO JOSEPH, *President.*
JOSEPH E. SAINT, *Secretary.*
FRANK SPRINGER,
W. A. HAWKINS,
GEORGE CURRY,
Commission.

The legislative assembly, on March 16, passed the law known as the "Land bill," the following section applying to the commission of irrigation:

SEC. 34. For the purpose of facilitating the selection of lands donated to the Territory of New Mexico by the act of Congress hereinbefore referred to for the establishment of permanent water reservoirs for irrigating purposes, and for the improvement of the Rio Grande, and increasing the surface flow of water in the bed of said river, there is hereby created a commission of irrigation, to consist of five members to be appointed by the governor, with the advice of the council, to serve for two years and until their successors are appointed. Such commission shall elect from among their members a president and secretary. The members of said commission shall serve without pay or compensation. It shall be the duty of said commission to investigate and select the most suitable sites for permanent water reservoirs for irrigating purposes and for improvement of the Rio Grande, and also to designate such tracts of public land capable of irrigation from such reservoirs as would in their judgment be advisable to locate for the Territory under said act of Congress, in order to secure the benefit of the enhanced value of the lands resulting from the establishment and construction of such reservoirs, for which purposes they may employ all necessary expert assistants, and to certify the result of such investigation, selection, and designation to the commission and acting under said act of Congress for the selection of the

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lands donated thereby. Said commission shall also, at least thirty days before the meeting of the legislature, make a report to the governor embracing all available information concerning the best method for improving the Rio Grande and increasing the surface flow of the water in the bed of the said river. Also concerning the subject of irrigation and water supply, the quantity of land in the Territory cultivated by means of irrigation, the extent of present and proposed system of storage reservoirs, the conditions existing in different parts of the Territory with reference to irrigation and water rights, and such other facts as they may deem proper, together with recommendations as to needed legislation on any of such subjects.

The necessary expenses incurred by the commission, to be certified by the secretary thereof and approved by the governor, shall be paid out of the proceeds of the land sold under this act which are credited to the fund for the establishment of permanent water reservoirs for irrigating purposes and the improvement of the Rio Grande: *Provided*, That the expenses provided for in this section shall not exceed fifteen hundred dollars for each year.

Under the foregoing section the commission was duly appointed, consisting of Hon. G. A. Richardson, Hon. Frank Springer, Hon. W. A. Hawkins, Hon. Pedro Sanchez, Hon. Levi A. Hughes.

The organization was perfected by the election of Hon. G. A. Richardson, of Roswell, N. Mex., as president, and Hon. Levi A. Hughes, of Santa Fe, N. Mex., as secretary.

I regard this as one of the most important boards in the Territory, and its work can not help but result in rendering great assistance toward promoting the interests of irrigation in New Mexico, besides the great good and benefits derived by the school lands donated by Congress.

MONEY IN IRRIGATION.

The improved systems of irrigation upon which New Mexico has to depend for the multiplication of her useful land area are developing rapidly, but there are still many opportunities for the investment of capital in irrigation projects, which can not fail under good management to make millionaires of the projectors.

There is in operation the Springer system of irrigation, with 50 miles of ditches and five reservoirs, covering 22,000 acres. The Vermejo system of irrigation, which controls 57 miles of ditches and 10 reservoirs, supplies 30,000 acres. In the northwestern portion of the Territory there are 200 miles of ditches, watering 24,000 acres. Here there are several tracts of fertile soil, accessible to streams which will afford an ample water supply, awaiting the attention of moneyed men. Also extensive ditch systems are in operation in the Mimbres region of Grant County.

The irrigation projects noted above are in the four corners of the Territory. In the meantime, the great central portions are receiving attention, more than fifty companies having been organized for irrigation projects, and several having plants in operation, affording to the home seeker at the present time ample opportunity for settlement and reclamation.

The valley of the Rio Grande presents the most extensive field for operations of this kind, as the present narrow strip of cultivated land can be widened very materially by a proper disposition of the water which flows so abundantly from the north, and is now allowed to be wasted. A few years will find all the water now suffered uselessly to run away, utilized to the highest degree and enlarging the area of the agricultural and horticultural land to an extent almost fabulous.

Meanwhile, individual enterprise is increasing the local supplies by the erection of multitudes of windmills, pumping from artesian wells

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RANCH AND IRRIGATION RESERVOIR.

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in various parts of the Territory. These prove the existence of great bodies of water underlying a large portion of the Territory. To the settler this means much, and will add in a great measure to the future possibilities of production.

THE NORTHWEST RIVER SECTION.

The San Juan River country, in the northwestern portion of the Territory, offers a splendid opportunity, not only for the production of cereals, but also for vegetables and fruits of all kinds. The vine thrives to perfection. The valleys of the Las Animas, La Plata, and Los Linos, all tributaries to the San Juan, are also capable of rendering large amounts of produce. The valley of the Chama River, especially in its upper part from Chama, on the Denver and Rio Grande Railway, to below Tierra Amarilla, the county seat of Rio Arriba, is one of the finest valleys in the country, and highly productive. And again, the valleys of the tributaries to the Chama, the Brazos, Nutritas, Gallinas, Puerco, El Rito, Ojo Caliente, Bear Creek, and others are all highly susceptible to cultivation. The valley of the Puerco of the East, and the Rio Jemez, with its many tributaries, afford fertile lands, already for centuries under cultivation.

ADVANTAGES OF IRRIGATION.

When the Eastern farmer sees all the work entailed in laying out a wheat field for irrigation and the subsequent labor of applying the water, he is often heard to exclaim, "If all that work is necessary, I have no use for irrigation." It is useless to attempt to disguise the fact that irrigation entails much expense in the cultivation of crops. Of course, that expense varies with the kind of crop raised; but the question may be asked whether the value of the extra quantity produced is not in excess of the extra expenditure.

Let us take the case of alfalfa. The yearly expense per acre for irrigation, as has already been shown, is $2.15; but four crops of hay are raised in the year in lieu of one without irrigation, or say 3½ tons instead of 1½ tons. The farmer therefore gets an extra 2 tons of hay for an expenditure of $2.15 in water. Add $2 for the cost of harvesting these 2 tons, and you have an extra 2 tons of hay, costing $4.15, or $2.08 per ton.

In the case of wheat crop it is not easy to give exact figures, but I have no hesitation in saying that the crop will be double what it is in countries where irrigation is not practiced and where fertilizers are not used. This is due in large part to the fertilizing properties of the river water, to which reference has already been made, which insures the permanent fertility of the soil. One must also bear in mind the fact that wheat and almost all farm products are worth more in the irrigated districts of the West than they are farther east.

No farmer would consider it a waste of money to put 10 tons per acre of barnyard manure upon his land every year, even though it cost him $6. For half this expense he can, where the river water is of the same quality as that which irrigates the Mesilla Valley, not only appiy fertilizers equal to the contents of 10 tons of barnyard manure, but he gives the crop the exact amount of water required for a full yield, insures it against loss by drought, and gets a better price than could be obtained elsewhere. Irrigation farming means intensive farming; and it is intensive farms which pay in the long run.

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If the question is asked, as it often is, What is the most profitable product to raise in New Mexico? the answer generally made is that apples, peaches, grapes, or some fancy crop will pay the most money, and dazzling figures are given showing the number of pounds per acre and cents per pound, resulting in a rapid fortune from 40 acres of land.

THE CANADIAN RIVER SECTION.

This agricultural district lies between the Raton Mountains on the north and the Pecos River on the southwest. The Canadian flows through it for about 150 miles in a southeasterly direction to near old Fort Bascom, and from there easterly (a little north of the thirty-fifth parallel of north latitude) for about 50 miles. Most of its tributaries flow in from the west. As the western part of this entire section has a slope toward the east with a general descent to the southward, the highest localities are in the northwest corner and the lowest in the southeast, with a falling altitude of from 5,000 to 3,000 feet. Some portions of this river have a fall of 9 feet per mile. Of its tributaries, the Little Cimarron and Vermejo creeks afford considerable breadth of arable land, the former having a valley from 25 to 30 miles long and from 1 to 6 miles wide, and the Vermejo one of the same length and about 2 miles wide. Both of these valleys are very fertile, with plenty of water for irrigation. The Rayado Creek has a good valley, but it is subject to overflows. Ocate Creek Valley, formed by erosion, is also very good agricultural land. The Mora River Valley is doubtless the finest in this section. It has a length of from 60 to 70 miles and a breadth of about 4½ miles. Its upper portion, from 8 to 10 miles in length, is about 3 miles wide.

GILA AND COLORADO RIVER SECTION.

This section embraces a belt of land of from 50 to 100 miles wide along the whole of the western line of New Mexico. It is watered by the Rio Puérco of the West and the Zuni River in the north, and by the Gila and its many tributaries and the Rio San Francisco in the south. There are rich and extensive valley lands along the bottoms of these rivers, the most fertile being that of the Rio San Francisco.

NEW MEXICO SOIL.

The soils of New Mexico, as a rule, are quite different from the soils of the Eastern States and possess many advantages not possessed by the latter.

The power of the soils to produce plants depends upon many conditions, among the more important of which may be mentioned a proper contról of the moisture, the climate, and the amount of available plant food present.

In regard to moisture control, soils depending on irrigation for their moisture, as do those of New Mexico, have a decided advantage over soils depending solely upon rainfall. While the valleys of New Mexico have an average annual rainfall of probably some 10 or 12 inches, and the greater part of this usually comes in the summer during the growing season, it is still quite insufficient for the needs of ordinary farm crops, which must depend for the greater part of their moisture upon irrigation. The supply of moisture to irrigated soils is under almost absolutely perfect control, provided the water supply is constant. The advantages of such a control of the moisture must be apparent to anyone.

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HOW TO OBTAIN TITLE TO PUBLIC LANDS.

The following information is furnished by the register of the United States land office at Santa Fe, N. Mex.:

There are nearly 57,000,000 acres of unappropriated public land in the Territory of New Mexico. Agricultural public land is subject to entry only under the homestead and desert-land laws. The homestead laws of the United States secure to qualified persons the right to settle upon, enter, and acquire title to not exceeding 160 acres of public land by establishing and maintaining residence thereon and improving and cultivating the same for the continuous period of five years. A homestead entryman must be the head of a family or a person who has arrived at the age of 21 years and a citizen of the United States or one who has declared his intention of becoming such, and he must not be the owner of more than 160 acres of land in any State or Territory. A wife who has been divorced from her husband or deserted by him can make homestead entry. Payment of $16 fees and commissions must be paid at the time of entry, and final proof can be made at any time when five years' residence thereof and a cultivation of a portion of the land can be shown. The cost of making final proof, including publication of notice, taking testimony, and commissions, is from $14.25 to $15. A party can, at the time of making homestead entry of 160 acres, enter 160 acres under the desert-land act. He will be required to pay 25 cents per acre at the time of mak ing the entry, after which he is required to expend $3 per acre ($1 per acre each year for three years) in labor or money in improving the land and constructing reservoirs, canals, and ditches for irrigating and reclaiming the tracts entered; and the party may make final entry at any time prior to the expiration of four years on making the required proof of reclamation, of expenditure to the aggregate amount of $3 per acre, and of the cultivation of one-eighth of the land and making a final payment of $1 per acre.

BEET SUGAR IN NEW MEXICO.

The pronounced success in beet-sugar production in the Pecos Valley has occasioned widespread popular interest in the cultivation of sugar beets throughout New Mexico.

During the past three years, from beet seed furnished by the Agricultural Department in Washington, under the direction of the College of Agriculture at Las Cruces, the better class of farmers in the Territory have been raising sugar beets with uniform success. The fact is clearly demonstrated that on all the valley lands in New Mexico, with irrigation, may be grown the finest crops of sugar beets of the most satisfactory quality for the manufacture of sugar.

It appears that beets of large size, of small sugar content, may be grown almost anywhere with the ordinary attention given to a crop of corn or potatoes; but special conditions of soil and climate seem to be necessary to produce a crop of beets rich enough in sugar to be profitable for purposes of manufacture of sugar. In determining the presence or absence of these conditions, our Territory has occasion for congratulation in the zeal and good work of the College of Agriculture at Las Cruces.

Throughout the Rio Grande Valley, from El Paso to the Colorado line, results appear to be uniformly satisfactory. In the central portion of the Territory, in the high valley region about Santa Fe, the

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conditions of soil and climate appear to be specially suited to this crop. Here the uniform temperature and almost perpetual sunshine during the growing season seems to develop a larger percentage of sugar in the beet than in almost any other section of the United States in which tests have been made. It appears from tests made at the experimental station last year that Santa Fe grown beets weighing over 10 pounds tested over 12 per cent sugar content, and smaller beets of less than 20 ounces contained more than 20 per cent of sugar.

The yield per acre with irrigation appears to be merely a matter of care and skill in cultivation and in handling the crop under our conditions of climate. The tendency in overirrigation is to produce a large beet of small sugar content. On the other hand, on the prevailing sandy clay soil about Santa Fe from 10 to 12 tons of small beets of large sugar content may be grown with even less water for irrigation than is usually given an average crop of corn. For sugar making the beet most desired should weigh less than 20 ounces and contain more than 15 per cent of sugar; and for the raising of this beet New Mexico has the necessary soil, sunshine, water, and cheap labor to successfully grow in almost any quantity desired. It is not alone in the production of sugar beets of superior quality that New Mexico invites the attention of the sugar-making interest in the country; her railroad facilities for delivering beets at a common point centrally located for the manufacture of sugar in the Territory are all that can be desired. Both at Santa Fe and at Albuquerque may be located sugar factories, convenient to the ample supply of good water, cheap fuel, the best of limestone in unlimited supply for factory use, and reliable local labor. The Rio Grande Valley, and especially in the neighborhood of Santa Fe, has been the home of a native population for many generations accustomed to small truck farming and gardening with irrigation, and are already skilled in the light labor required for the cultivation of the sugar beet.

It is rare indeed that all or so many of the conditions for successful beet-sugar production may be found in the same locality.

Nature has indeed been generous in endowing New Mexico in this particular interest.

CARLSBAD, N. MEX., *July 15, 1899.*

DEAR SIR: Your communication of the 1st instant duly received, and I take pleasure in giving you a concise statement in regard to the beet-sugar industry in our Territory.

The beet-sugar industry was started in the United States in the year 1887, with a production in that year of 30,000 tons of beets. From this small beginning it has rapidly advanced, especially in the last three years, bringing up the production of beets to over 1,000,000 tons, equal to over 100,000 tons of refined sugar, with factories working their full capacity daily for one hundred days during the year, this being a fair average of the length of the campaign of the numerous factories now in operation.

The State of Michigan has experienced the most rapid development, owing to the large State bounty given, and while I do not believe in State bounties, as you will see by the inclosed marked copy of my address upon the beet-sugar industry at the Trans-Mississippi Congress, recently held at Wichita, Kans., still, if other States do give these bounties, you can readily see the disadvantage it puts our Territory and other Territories and States under, where it seems impossible to get a bounty, and as long as these bounties do exist it will materially retard the development of the industry here, even if the sugar beet grows well and is of a good quality, since investors will always seek the locality offering the best inducements. The quality of the beet raised in any section of our country is not sufficiently superior to counteract the bounties paid by some of our States; hence the rapid development in the districts enjoying the fostering care of State governments. I mention all this as the principal reason why the industry has not grown in our Territory.

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THE SUGAR BEET IN NEW MEXICO.

As early as 1891 it was known that sugar beets yielding a very high per cent of saccharine could be grown in New Mexico. In that year a number of samples grown in the Pecos Valley were shipped to the Department of Agriculture in Washington for analysis, and were found to contain an average of 14½ per cent of sugar, the richest beets giving 21.85 per cent.

New Mexico belongs to the section of high plateaus which, under proper cultivation, can be made to produce a phenomenally rich beet.

Experiments in sugar-beet growing continued in the Pecos Valley until 1895 with results so satisfactory that in the following year, 1896, the first sugar factory in New Mexico was built in Eddy, now Carlsbad.

The factory is now entering upon its fourth campaign. The past three campaigns have not been the financial success expected, owing to an insufficient supply of beets, due to the scarcity of farmers. The success in raising sugar beets is made in localities where the average acreage per farmer is not over 5. In Lehi, Utah, where the most continuously successful crops have been raised in the United States, the average is only 4. As an example, you can readily understand that 100 farmers cultivating 5 acres each will raise many more tons than five farmers cultivating 100 acres each. The sugar beet is rather a garden crop and requires considerable care to bring about the best results, and a man having only 5 acres is able to give the crop all the attention required, while a man cultivating 100 acres is bound to neglect the proper cultivation and care of it, at least on a large portion of the field. The beet crop repays handsomely the close, careful, and intelligent work put upon it. It is not uncommon to obtain a yield of 20 tons to the acre, although an average of 14 tons is considered exceedingly good.

The advantages of the soil of New Mexico for the growing of the sugar beet on a profitable scale surpass many localities in the United States, and under proper conditions—namely, a sufficient number of good farmers, who will not undertake too large an acreage and work wisely—I doubt very much if New Mexico has a superior anywhere, especially where irrigation can be applied. The number of days of clear weather, with good soil and an abundance of irrigating water, together with proper attention, should give a good yield every year, and our climatic conditions will give a richer beet than in the districts located outside of the arid regions, because it is well known that the sugar in the beet does not come from the soil, but from the clear atmosphere, and as we have more bright, sunny days here than, I believe, in any other sugar-beet district, our beets contain and will continue to contain a higher percentage of saccharine matter. Again, the dry fall and winter, together with the absence of hard frosts, allow the beets to remain in the ground until needed by the factory, thus doing away with the expense of siloing, necessary in Northern States.

As stated before, the sugar beet is a profitable crop for the farmer to raise. We pay $4.75 per ton for beets delivered to the factory. The freight charges are 50 cents per ton from any station on the line of our railroad. As most of our beets are delivered by rail, the farmer therefore realizes at least $4.25 per ton f. o. b. cars at his nearest station.

Contracts are made at the beginning of every planting season, thus guaranteeing a cash market to the farmer for his crop, which is in no way affected by the price of sugar or by any speculation. The cost of raising an acre of sugar beets up to harvest time should not exceed $12 per acre. The harvesting of the crop, including loading on the cars or at the company's sheds, should not cost over $1 per ton. A farmer can, therefore, realize a profit of from $15 to $35 per acre.

Lands in New Mexico are cheaper than in any other sugar-beet district, ranging from $15 to $30 per acre, which should also be an inducement to settlers to locate here.

Again, the season for planting is longer than elsewhere, extending from April 1 to July 1. This is an advantage in case of a mishap to the early planting, as it gives sufficient time for replanting in order to raise a good tonnage before the factory is ready for the beets. Our harvest commences in November. It continues, or would continue, with a full crop, until March 1, keeping the farmer busy during the months in which with other crops he is idle and when all other crops are harvested and disposed of.

The capacity of our factory is 200 tons of beets per day, and capable of producing 4,000,000 pounds of white granulated sugar. It is so constructed that it can easily be enlarged when necessary.

A beet-sugar factory is of lasting value to a new and growing community. Our factory during a four months' run pays out in wages about $25,000, to farmers

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for beets over $85,000, to say nothing of the amounts paid for freight, coal, and other items of expense which put money in circulation.

Trusting that this information will enable you to sufficiently cover the subject of the sugar-beet industry of New Mexico, and offering you any further data desired, I am,

Very respectfully,

ARTHUR S. GOETZ,
Manager.

Hon. MIGUEL A. OTERO,
Santa Fe, N. Mex.

THE CULTURE OF GRAPES.

Rio Grande Valley is well adapted to the cultivation of grapes. The principal kind now existing is the Mission grape, which was introduced by the Catholic missionaries as early as 1711, and has ever since proved to be the standard variety in this Territory, on account of the richness of its flavor, and the amount of sugar it contains. It makes an excellent red or white wine, and is equally valuable for the market. From experiments we know also that our Mission grape compares favorably with the French grapes for the manufacture of champagne.

With skill and good management it can not be surpassed. The cultivation of the vine has been practically taught to the natives, and their methods have proved ever since fully successful as to the covering, uncovering, cleaning, and pruning of vines.

There is no doubt that the soil of this Territory is splendidly adapted to the cultivation of the grape. Of late years a number of new varieties of vines have been introduced by various parties, and are doing well; nevertheless, they require the same methods of cultivation as does the Mission grape.

One acre, or 1,062 vines, will yield each year about 12,744 pounds of grapes, or 910 gallons of wine. This is considered a moderate estimate.

THE CULTIVATION OF THE GRAPE IN THE MESILLA VALLEY.

Among the natives the grape is the principal fruit raised in the valley, although many of the American farmers own good vineyards. The former grow the Mission grape almost exclusively, whereas the latter mostly raise the Muscat of Alexandria, Black Hamburg, Gros Colmar, Malvoisie, and other so-called California varieties, all of which thrive perfectly.

The grapes begin to ripen toward the end of July, and the shipping season usually lasts till about the last week in October. A great deal of wine is made, but it is usually more profitable to sell the fruit for table use. During the season large quantities are shipped, mostly in 10-pound baskets, to all the towns in New Mexico, and to many of the markets of Arizona, Colorado, Texas, Louisiana, etc.

The vineyards are usually started by putting a couple of cuttings during March every 8 feet each way, although many of the older vineyards are set at 6 feet apart. When the cuttings begin to grow, the weaker one is pulled out and the stronger left. The object of setting two cuttings is to make sure of one growing. At 8 feet apart each way 680 vines go to the acre, and this seems a better way or distance, than 6 feet apart, as it gives more room for cultivation. Some of the most progressive horticulturists consider that the rows 10 feet apart and the vines 8 feet apart in the row (544 vines to the acre) is still better.

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What is known as the "stump" method of training and pruning is followed. This consists in staking the vine during the first two years, so as to form a straight, upright trunk. The first year the vine is allowed to grow as it will, when it is cut back to its strongest eye. The second year all the buds are rubbed off to the height of 15 or 18 inches, and at the next pruning the cane is cut back to 18 or 20 inches, leaving two or three buds as a basis for the future head. From now the "short spur" system of pruning is adopted; that is, the canes are all allowed to grow as they please during the summer, and at the regular pruning in March these canes are cut back to one or two eyes, from which spring the bearing canes. Of course as the vines get old too many spurs are made, and many of them too long, when some of them must be cut out altogether. Under this system most of the grapes seem to thrive very well, although there is a great deal of careless staking and training in the early life of the vines, resulting in difficult pruning later on, and many of the bunches get spoiled by the mud, owing to the want of good, straight, strong trunks to hold up the fruit.

There is considerable difference of opinion as to whether the grape-vines need to be hilled up during the winter in this valley. The old custom among the natives has been to cover the vines with hills of earth in the month of November and not to uncover until the following March, when it is time to prune. The mounds of earth are raised sufficiently high to just cover the buds which are to be left for the coming year. No irrigation is given during the winter, or until after pruning.

The object of this hilling up is not to protect the vines so much from the winter cold as from the cold, drying winds, which cause the trunk to crack and the canes to winterkill. It is, however, claimed by those who have tried it in recent years that if the vineyards be irrigated during the winter these dry, cold winds do no harm and the vines thrive better. Pruning is usually done in March, but earlier grapes are produced when the vines are pruned in the fall.

Undoubtedly much better results would be obtained if the vines were wider apart, better trained, and the surface soil kept well pulverized throughout the year. People taking up this industry would be well repaid for the care given their vineyards in the sale of their grapes at good prices—soon becoming independent.

VEGETABLES.

Most every kind of vegetable can be raised in this Territory except, perhaps, the Irish potato in some localities. The potato is a native of the mountain country in its wild state, and in the central and western parts of Socorro County, along the northern line of Colfax County, and extending southward for 100 miles along the base of the mountains, the finest potatoes in the world are grown. The raising of this crop requires very little work, and the yield is very large.

Turnips, carrots, ruta-bagas, and cabbage all do well. Of the latter, it is no uncommon thing to see heads weighing from 20 to 30 pounds, and occasionally one that weighs several pounds more. Cabbages are worth from 1 to 5 cents per pound, depending upon the season of the year when they are sold. Onions excel in size and flavor, and are a good paying crop.

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FRUITS.

The fruit industry is coming to the front rapidly, and people coming to this Territory to settle learn that fine fruit can be produced here with much less trouble than in the States. There are many magnificent orchards in this Territory. The size and variety of the fruits raised would astonish and delight our Eastern orchardists. A large evaporator is now being built in Santa Fe.

Apples flourish luxuriantly. Pears, quinces, and plums appear to be in their native clime. The strawberry, currant, gooseberry, raspberry, and blackberry all thrive vigorously. The valley along the Rio Grande appears to be particularly adapted to all kinds of fruits, although all sections of New Mexico susceptible of cultivation will produce the finest variety of fruits, and most abundantly.

CEREALS.

Wheat, in quality, size, and quantity, is not excelled anywhere in the United States. Corn does well, and oats grow luxuriantly, but are generally cut green and fed in the straw.

TIMBER.

Both hard and soft pine, spruce, oak, cedar, walnut, mountain ash, quaking asp, box elder, cottonwood, etc., are all found in great abundance.

LUMBER INDUSTRY.

Extensive pine forests in New Mexico make the lumber industry here an important one. All over the Territory individuals are erecting sawmills, whose product is demanded and utilized by the people who use lumber for building purposes in the place of the ancient adobe. The profits of lumbering are large.

HORTICULTURE.

The first annual report of the New Mexico Horticultural Society, covering the year 1897, has just been issued. It contains an account of the fruit exhibit held last year in the city of Santa Fe and the efforts of the society to awaken an interest in horticulture and stimulate, by offering suitable prizes, the production of valuable varieties of fruit.

The exhibit referred to was highly successful. It brought together a display which in many respects was remarkable. It showed that New Mexico, in the variety of its fruit products, having regard to quality as well as species, stands in the foremost rank among fruit-producing parts of the United States. Some States may produce certain species of fruit of superior quality to any yet produced in New Mexico, but the same States may fall short in respect of certain other species in which New Mexico may excel; so that it is in the uniformly high grade of its fruits that New Mexico surpasses the other parts of the Union.

Horticulture is a business to which the people of New Mexico may well give great attention. It would be practicable for them to supply large quantities of excellent fruit to the markets of the Mississippi Valley and the lake region. The climate of their Territory will admit

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NEW MEXICO APPLES.

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of placing the products of their orchards and vineyards in the market at an earlier date than many competitive places, and care and experience in cultivation would in time enable them to produce varieties of a very superior grade.

Practically all the irrigated valleys of the Territory are adapted to fruit growing. The soil of the Rio Grande and Pecos valleys, for instance, is highly fertile, and irrigation has demonstrated its adaptability to both viticulture and horticulture. A good quality of wine could be produced by care in selecting the proper species of grapes. This has already been shown by what has been achieved in that direction. Altogether, the New Mexico Horticultural Society has an excellent opportunity for the accomplishment of a work of enormous value to the Territory.

Our horticultural fair was pronounced by all the most comprehensive and evenly balanced exhibition of fruits of all kinds ever seen, and it has stamped New Mexico as the most perfect fruit-growing section of the world, and while there are many exhibitions on a much larger scale and some which might excel in some particular fruit, there is none which includes such a splendid showing of fruits of all kinds. There is one very noticeable thing about the fruit of New Mexico, and that is it is entirely free from insects of all kinds, is firm, and of very fine flavor.

During the course of this fair it was visited by those familiar with the American Institute fairs in New York, with State fairs of the East, as well as those of Colorado and California, and all concurred that the fruit excelled anything seen before at similar fairs.

Among the exhibits were 246 entries of apples, 34 of crab apples, 125 of pears, 58 of peaches, 108 of plums, 13 of apricots, 37 of nectarines, 15 of quinces, 36 of grapes, 12 of nuts, etc.

When the premium list was published the criticism was made that the number of varieties of fruits required for the first premiums were so large that no entries of that character could be made. The schedule called for 40 varieties of apples, 40 of pears, 20 of plums, 5 of apricots, 5 of nectarines, etc. The result showed that our horticulturists are raising a much larger variety of fruits than was generally supposed, as in all the above cases the required number was actually exceeded.

Among the notable specimens were the following: Largest apple, weight, 23 ounces; circumference, 15¾ inches. Red Beitigheimer, weight, 18¼ ounces. Gravenstein, 14 ounces and 13⅝ inches. Russet, 13½ ounces and 13½ inches, etc.

Among the pears a Bartlett weighing 18½ ounces, and an Idaho weighing 18 ounces were noticed.

The Agricultural College (of New Mexico) exhibit showed a peach weighing 10¼ ounces, and a Pride of the Rio Grande weighed 10½ ounces.

A bunch of Muscat grapes, grown as far north as Espanola, weighed 25 ounces, though not ripe; and Stanwick nectarines from the same locality reached 5¾ ounces in weight.

No premiums were offered for vegetables and no provision made for their exhibition, but so many excellent specimens were brought in voluntarily that it is evident that arrangements should be made to include them as well as floral displays at subsequent exhibitions.

The horticultural fair which has just closed here was a great success from every point.

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MEMBERSHIP AND INCOME OF THE NEW MEXICO HORTICULTURAL SOCIETY, INCORPORATED AS A TERRITORIAL INSTITUTION IN 1886.

The number of life members is 17; of annual members, 166.

As life membership practically cuts off future income, the society has decided to lay aside half of the sum received from life members as a permanent fund for the purchase of land or erection of buildings in the future.

The total receipts of the society during the past year were $712.40.

Life members	$150.00
Annual members	166.00
Admissions	169.45
Subscriptions	67.50
Donations	27.85
Premium, less expense	131.60
Total	712.40

AGRICULTURE—HORTICULTURE.

[George Vestal, agriculturist and horticulturist, New Mexico Agricultural College Experiment Station.]

AGRICULTURE.

Our agriculture is carried on by the aid of irrigation, and when water is plentiful abundant crops are produced. In San Juan, Rio Grande, Pecos Valley, and other parts of the Territory modern farms exist, and when well managed are profitable. When a system of storing flood waters is put in operation immense areas will be put into cultivation. Alfalfa is the principal crop raised, producing three to four cuttings each season, yielding 3 to 5 tons of hay. It is an excellent feed, and most work horses receive no other at any time of the year, and remain in good condition even when continually worked. Wheat is largely raised, principally by the Mexicans. Rye and barley also do well. The experiments carried on with sugar beets at this station and by farmers in different parts of the Territory during the past year conclusively prove that beets of the highest quality can be produced in nearly every section of the Territory. Beets were produced which showed 10 to 22 per cent sucrose, great numbers of the samples running 14 to 17 per cent. The cultivation of the sugar beet is susceptible of a great development. Kaffir corn has proved to be a good crop in this climate and is largely cultivated in some sections. There are many crops not now cultivated which would prove profitable if attention were directed to them. Many sections of New Mexico, by reason of altitude or other conditions, have climates peculiarly their own, which would prove well adapted to some particular crop which would suggest itself to any live farmer. One great advantage the farmer has here over the Eastern farmer is the ease by which he can preserve his crops. The dry, pure air retards decay to a great extent, and the absence of heavy dews and rains enables him to harvest and store his crops with but little waste.

HORTICULTURE.

It is in horticulture that New Mexico may expect her greatest development. The soil, when properly cultivated and irrigated, and the climate seem to be peculiarly adapted to the production of fine fruit. The soil is supplied with such essential elements for tree growth as lime, potash, etc., in such abundance as to be practically inexhaustible. These fertilizers form a large part of the expense bill of the fruit grower of the humid region. Our sunny climate produces a large, fine-flavored, high-colored, attractive-looking fruit, which greatly adds to its selling qualities.

The fruit industry of the Territory is still undeveloped. True, fruit growing has been largely carried on in San Juan County, the Rio Grande, and Pecos Valley, and large quantities of fruit have been shipped to near-by and distant markets, successfully competing with fruit from other States; but the large area comprising the small valleys, mesas, and level tracts, when supplied with irrigating waters, will produce such fruits as their climates will mature in larger quantities and to a greater perfection than any other part of the United States.

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VEGETABLES.

Vegetables of all kinds reach their highest development in the parts of the Territory having climates favorable to their growth, and when properly cultivated yield enormously. The quality of our fruits and vegetables will compare favorably with those produced anywhere. The celery of Bernalillo and Chaves counties has gained a wide reputation for its crispness and fine flavor, and is quite largely shipped to adjoining States. The cabbage of northern New Mexico has been known for years to be as fine as can be produced. The tomatoes of the Mesilla Valley, when canned, are superior to any yet brought to this market, and the demand for them is rapidly increasing.

TEN ACRES ENOUGH.

[W. S. Burke.]

WHAT A MAN CAN DO WITH A SMALL TRACT OF LAND UNDER IRRIGATION.

Sweet potatoes of most excellent quality yield abundantly in all the valleys of the central and southern portions of the Territory, and constitute one of the best crops that the farmer can raise, because they enable him to realize a good return for his season's work from a very small tract of land, which is an important consideration to a farmer anywhere, but especially so to one in an irrigation country. The soil and climate of this country seem to be peculiarly adapted to the growth of the sweet potato: the quality of the product is fully equal to that of the famous potatoes of New Jersey, and a fair average crop will give from 900 to 1,000 bushels to the acre with proper cultivation. They never sell for less in the fall than $1 a bushel, and those that are kept into the winter usually bring as much as $2. From this it will be seen that 1 acre cultivated to sweet potatoes in New Mexico will yield the farmer as much money as he can hope to realize in a good year from 80 acres of corn or wheat in Kansas or Nebraska, and since the results are to be measured by dollars and not by acres, it will be apparent to anyone that the irrigation farmer, although he may not be able to cultivate fields as broad as those of his neighbor in the rain belt, has a better prospect of success and a decidedly better chance of a bank account at the end of the year.

The onion is another product that seems to be peculiarly adapted to this section of the country. The large white Spanish onion, which grows to greater perfection in the Southwest than anywhere else in the United States, affords one of the most profitable crops that can be grown in this Territory, and requires irrigation to bring it to perfection. On account of its beautiful silvery color and its peculiar mild flavor, this onion finds ready sale in any part of the country, and always brings the highest market price. The yield is about 500 bushels to the acre, under proper cultivation, and the price at home ranges from $1 to $2.50 per bushel.

Celery and asparagus are also articles which are especially adapted to the soil nd climate of this country, and attain here a degree of excellence rarely found n such articles grown elsewhere.

The New Mexico celery is far superior to that grown in California, and is pronounced by all who try it fully equal in all respects to the famous Kalamazoo product, which is noted throughout the country for its superiority.

And when it comes to asparagus New Mexico can fairly claim to "beat the world," for nowhere else on the American continent is there raised asparagus which can at all compare with that grown in the valley of central and southern New Mexico. In many places there are large quantities of saltpeter in the soil (the American settlers call it "alkali," because it comes to the surface after a rain and makes the ground white, causing it to resemble the alkali of the north). This article, which is deleterious to many kind of vegetables, is the favorite food of asparagus and obviates the necessity of applying salt to the ground, as has been done wherever this vegetable is grown in the Eastern or Middle States. It also causes the plant to attain a degree of excellence and flavor in this country which is unknown elsewhere. During April and May, the months when the cutting is done, the shoots will attain, under favorable conditions, a growth of about 6 inches in a day, every particle of which is edible; there is no woody portion to be thrown away; the whole stock is as soft and tender as green peas, and the flavor is proportionately superior. Sample lots of New Mexico asparagus have been sent to many parts of the country, and the verdict is everywhere the same, "The best I ever saw." It is not only better than that grown in the East, but is so much better that its superiority is noticeable at once, even to the casual observer. Actual experience has shown that it will bear shipping to Portland, Me., and that is as far away from New Mexico as you can get in the United States; so the whole

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country is open to us as a market, and that the article can be sold wherever it is introduced goes without saying—it will sell itself.

An asparagus bed of 1 acre will yield, after the third year, about 200 pounds a day for sixty days, which is as long as it is wise to cut it; this will bring an average of 10 cents a pound during the season. An acre in sweet potatoes will yield 900 bushels, worth $1 a bushel at least, as soon as they are dug. An acre of onions will yield 500 bushels, worth never less than $500, and an acre of celery can be relied upon to bring as least $600. A man needs 2 acres in alfalfa and 2 in corn or oats for his horse and cow and 2 acres for house lot, orchard, and kitchen garden. That makes 10 acres in all, which is as much as any man needs to farm for profit, and is fully as much as the most industrious man can cultivate properly. There is an abundance of good land for such purposes to be had in all parts of the Territory. Take, for example, the Rio Grande Valley, the oldest portion of the Territory in point of settlement, a section that has been settled for more than three hundred years, and yet not one-fourth of the available land in this section of the country is under cultivation at the present time. Beginning a little above Bernalillo and going down to a point a little below San Marcial, we have one of the most desirable and fruitful sections of the famous valley and lying right in what may properly be called the agricultural center of New Mexico, a district of about 150 miles in length and with an average width of about 5 miles, embracing 750 sections, or 480,000 acres; and yet a careful writer, who has traveled frequently over the district of country in question, says: "If we concede that one-tenth of the land is now under cultivation, we are making a very liberal estimate." But if we should almost double this very liberal estimate, we should still have in the district referred to about 400,000 acres of unused land—enough to furnish homes and profitable employment to 400,000 families, or more than the entire present population of the Territory. And there is no waste land in this district named; it is all arable and all tillable and needs only the application of water to make it as productive as the best land in any part of the world. The Rio Grande carries water enough for the cultivation of the whole of this tract without encroaching in the least upon the rights of those who live farther down the river. True, there would not be water enough under the system of irrigation at present in use—a system that was adopted three hundred years ago, when economy in the use of water was something wholly unknown and totally unnecessary, and under which the water wasted is at least five times as much in quantity as the water used—but it is not to be supposed that this system will continue many years longer. Modern systems of irrigation are being introduced in all other sections of the country where farming is done by irrigation. New Mexico will not remain long behind the times. The system practiced in California and Colorado, and in the Pecos Valley in our own Territory, which puts the water upon the cultivated fields and not upon the waste places and the wagon roads, will soon be adopted in this section, and then, as we have said, the Rio Grande will furnish water enough to irrigate all the lands in its valley and will support more people than are now in the whole Territory.

A country like New Mexico, where all kinds of fruit and vegetables can be grown to such perfection and in such profusion, is the place for canning factories, and it is safe to say that there is hardly a settlement in the Territory in which there is not at the present time a good opening for an establishment of this kind. The genial climate, the long seasons, the almost perpetual sunshine, and the rich soil, which is further enriched at every irrigation by the valuable sediment which is brought down from the mountains, all combine to produce conditions which are not surpassed in any part of the world for the successful growing of garden vegetables, and the yield of these is so enormous that it would hardly be believed by anyone who does not possess a practical knowledge of the subject. There is a reliable home demand for all such products, and everything of that sort that can be grown here will be needed to supply the wants of our own people; but there are comparatively only a few vegetables that can be kept for winter use without preserving or canning. It is a well-known fact that the people who live in the cattle and sheep camps and the mining camps and villages of the West are the largest consumers of canned goods in the world; many of them practically live out of tin cans. The area of country in the Southwest that can be used for mining and grazing purposes is so much greater than the area that can be cultivated, and such a great number of people must always find employment in those occupations, that all the vegetable products of the country will always find a ready market at home. But, as is well known, it is necessary for the greater part of these products to be canned in order to be utilized. At present we are not producing one-fourth of the vegetables we consume for want of proper facilities for preparing them for market, and while we are able to produce more and better

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vegetables than any other section of the United States, our people are fed mainly upon the inferior products of other sections. If this condition of things had to be permanent it would be rather discouraging; but it will not continue very much longer; the good openings that are presented in all parts of the Territory for the establishment of canning factories will soon be taken advantage of by men who are looking for good business opportunities. The only reason why such industries have not already been established in all sections of the Territory is the fact that our present careless and haphazard system of irrigation renders the supply uncertain; but given a reliable modern system, such as will soon be introduced in every section where there are intelligent, progressive people, and it will be but a little while before we have canning factories enough established in the Territory to take care of all the vegetables we can raise, and the large sums that we now send abroad every year to pay for stuff that we buy from other sections will be kept at home for the benefit of our own people.

With respect to canned goods, woolen goods, and all other articles which can be manufactured successfully here, we will not only have the advantage of a market at home for all we can produce, but the Territory is so far away from any other manufacturing center that the cost of transportation on goods shipped in from abroad is great enough to give the home manufacturer a good "protective tariff" which no Congress can repeal.

CANAIGRE.

An industry that is exclusively adapted to the arid Southwest, and especially adapted to New Mexico, is the production of the canaigre plant.

The following extract from Bulletin No. 21 of the Arizona Experiment Station will give the information asked by many as to whether canaigre may be grown in their respective localities:

The best conditions for the growth of canaigre are a cool but not freezing climate, a moderate amount of moisture, sandy, fertile soil, and probably also a sunny and arid atmosphere. These conditions are nowhere combined more perfectly or for a longer period of the year than during the six or seven cooler months in the arid Southwest. * * * A mean temperature of about 70° or less is required for the growth of canaigre. Above this, even though there be abundant rain, as was the case in August, the roots will not do more than sprout feebly, and various attempts to make them grow in warm weather have failed. This seems to limit canaigre to the Southwest, for nowhere else, excepting possibly in some of the Southern States, is there so long a period of mild weather. It has been grown experimentally in Florida with some success, but in the Northern States the interval between the severe cold of winter and the extreme heat of summer is too short to allow of much root development. The sprouting of the roots in August, under the influence of rain, suggests that, in the culture of canaigre, one or two summers would prepare the plant to grow more promptly on the advent of cool weather.

The growing plant will stand a good deal of cold. When frosted the leaves lie prostrate on the ground, but immediately regain position when thawed out by the sun. The root also will endure freezing. It has been left in the ground all winter 60 miles north of New York City, subjected to a temperature as low as 15° below zero, without injury. At Lincoln, Nebr., the roots stood a very severe winter without any damage whatever. At Peoria, Ill., plantings made in 1892 were still alive in 1895, and similar results are noted at Washington, D. C., and Garden City, Kans. The new root development, however, is stated in a number of cases to be insignificant under such conditions

As to locality, canaigre is found more commonly in sandy washes where water is more abundant. With irrigation it will make a good growth in any fertile, tillable ground, but the influence of soil conditions on actual production has been little studied. It seems to stand considerable alkali, and is even reported in the salt-grass meadows of Tia Juana Valley, near San Diego, Cal.

The tanning materials in canaigre remain pretty constant throughout the growing season, with, however, a small but distinct increase after the plants become established in vigorous growth. The amount of this increase in mature roots from year to year was further shown by taking four samples of wild roots, comprising every age up to about 5 years, dividing the samples as nearly as possible into successive years' growth and analyzing. It was found that the average increase of tanning materials from year to year, in ten instances, was 1.64 per cent in water-free material. In one set of cultivated samples the averages of the first and second year's roots differed 2.64 per cent. This indicates a small but constant

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increase in the per cent of tanning materials from year to year, but holds true only so long as the roots retain their vitality. When they die the tanning substances quickly disappear. Although the percentage does not increase remarkably from year to year, the roots themselves become larger, so that the actual amount of tanning materials is much greater.

A factory for extracting tannin from canaigre is located at Deming, 230 miles from Albuquerque, and directly tributary to El Paso; but arrangements are made to start a tannin factory at San Antonio, N. Mex. Parties interested have been very busy in San Antonio for the past several weeks taking options on land, selecting a site for the factory, and perfecting other arrangements attendant upon immediate construction.

The factory at Deming has been depending upon its supply of canaigre from the wild root which grows in the greatest abundance in southern New Mexico, and is gathered by the natives and shipped. Now, however, it is proposed to cultivate the plant, and already options have been secured on 3,000 acres in the immediate vicinity of San Antonio, with 2,000 acres more to follow, thus making 5,000 acres altogether. This immense tract of land will be placed under a complete system of irrigation, for, although the canaigre plant grows wild in the most arid regions, it takes five years to assume mature growth, while under irrigation a good crop can be produced annually. Canaigre grows only six months in the year, and, strange to say, this is during the winter season from October to April. This plant has been used by the Mexicans for centuries in tanning their leather, but always in a dry form. Now, however, there has been discovered a process by which the acid can be extracted from the green root so that a new supply can be taken from the fields every day and converted into tannic acid, thus making the root worth from $80 to $90 per ton in any market.

San Antonio was selected as the most suitable place on account of its irrigating facilities and its rich coal fields. The coal mines of the Hilton Mercantile Company lie not very far distant, and the fuel can be had at a very nominal rate. The factory will employ 50 or 60 men, while the cultivation of the plant will give work to an additional force of 250 men. The capitalists who are interested, it is said, will spend a quarter of a million of dollars before they get the factory in running order. This will undoubtedly make it one of the most important enterprises in the Territory, and will mean a great era of prosperity for the San Antonio Valley.

CELERY PRODUCTION.

A product in which the Pecos Valley is gaining special distinction is its celery. It is an industry which is developing rapidly and constantly acquiring new markets. The most extensive production of this delicacy is near Roswell, on the Spring Brook Celery farm. The farm is watered by a great spring of water bubbling from mother earth, which, combined with the continual sunshine peculiar to the Pecos Valley and the saline nature of the soil, makes a combination for growing a high grade of celery not possessed by any other country. The constant sunshine, which blushes the apple, crimsons the cherry, ripens the golden grain, colors the flowers, and flavors the fruits with the choicest essence of nature's brewing, is no less potent in storing up those essential qualities in celery that raise it to a standard excellence, surpassed by none, equaled by few, and may be well said to bear the same relation to the celery trade as gold to the monetary system. The celery raised in the Pecos Valley is pronounced by those qualified to judge superior to that

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raised anywhere else in the United States, and the fact that it leads all competitors in every market it has reached would seem to verify the assertion, particularly when it is known that it came in competition with the product of the most famous celery farms in the whole country. The soil of the valley seems to possess to a marked degree the constituents which impart to this table delicacy the peculiar nutty flavor so much sought after by epicures. The Spring Brook farm has proven a full success, both in the production of the vegetable and in marketing it to financial advantage. The Roswell Register notes this fact in a recent paragraph, which says:

W. M. Farmer has just received returns from his last shipment of celery. The total figures show that, in addition to supplying the local demand, he shipped out 88,815 pounds. The express bill on this was $1,389.80. The gross income realized at the farm for the crop of 20 acres was over $6,000.

The planting on this farm has been increased to 25 acres this season, while all over the valley farmers are putting in beds of greater or less extent.

FANCY TOBACCO SEED TO BE DISTRIBUTED AMONG NEW MEXICAN FARMERS BY THE COMMERCIAL CLUB OF ALBUQUERQUE.

The following letters relative to the culture of tobacco have been received by the Commercial Club of Albuquerque, and the seed mentioned is now at the club rooms awaiting distribution. The seed will be issued in small quantities to all farmers who wish to raise tobacco and who will agree to give the intelligent care and attention necessary to insure successful cultivation. The letters are self-explanatory:

CHICAGO, ILL., *December 22, 1897.*

COMMERCIAL CLUB, *Albuquerque, N. Mex.*

GENTLEMEN: Not long ago Mr. Chambers, general freight agent, sent me a sample of the tobacco raised in the vicinity of Albuquerque, which I sent to an expert grower in Virginia, who reports on same as follows:

"The tobacco you sent to me has an excellent flavor, but owing to the fact that it was cut before being thoroughly ripe, it cured up green. In as dry a climate as New Mexico, with the proper kind of seed to begin with, tobacco ought to cure a splendid bright-red color without using any fire at all. But in order to get the right color and flavor, two things are necessary—the right kind of seed, and allowing the plant to become thoroughly ripe.

"In New Mexico the plant bed should be made in February, and should be from 20 to 50 yards square, according to the size of the crop contemplated, and should be irrigated. The plant bed should be gotten in thorough order and the seed should be sown in it by the 1st of March.

"The plant should be ready to set out in June, and, if the ground is in good order, one rain or one irrigation will make the crop. Tobacco requires less water than any other plant I know of. The great trouble with us is that we have too much rain, which makes it cabbage or bunch up. If we could have moisture just when we wanted it, and not too much, and such soil as you have in the West, we would make the finest tobacco in the world.

"Hoping to hear from you soon, I remain, your friend,

"W. G. PILKINGTON."

Comment is unnecessary. Tobacco is one of the most important and most profitable of crops. On the strength of the opinion above given, by one qualified by long experience as a grower and manufacturer to speak knowingly, I would warmly advocate your body's taking up the matter of careful experimentation in tobacco culture, with a view to its becoming established on a sound basis as one of New Mexico's products. I will be glad to render any assistance in my power to that end. I have written for information as to the best seed to use.

Very respectfully,

JAMES A. DAVIS,
Industrial Commissioner, A., T. and S. F. Rwy. Co., Chicago, Ill.

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ALFALFA HAY.

The remarkable development in the West of the species of hay known as alfalfa, within the past few years, can not fail to interest the farmer immigrant. Special attention is now given here to the cultivation of that crop, and it has proved a great success. It is a plant of wonderful power of growth. As a rule, three cuttings a season are made in the North and five in the South, which will average for the season one and a half tons per acre to each cutting.

It is a species of lucern, a perennial, an enormously prolific grower, containing a very high percentage of nutritive matter, and is of such a hardy, aggressive character that once it is firmly rooted it requires little attention other than an occasional irrigation and harvesting of the heavy crop of hay which it produces. It is the fodder plant of this region and the one factor that will permit stock raising and fattening to be successfully carried on upon modern scientific principles, in what has heretofore been known as the "arid region."

Formerly, from the want of some cheap fattening food, the far West was entirely dependent upon the agricultural States for its fattened beef. Cattle were shipped from New Mexico to Kansas or Missouri, fed there on corn, and then sent back as beef in refrigerator cars, to be eaten, perhaps, close to the place in New Mexico from which a few months previously, the thin ox had been shipped, thus necessitating a double journey of 600 to 1,000 miles, and an additional expense of 4 to 6 cents per pound for carriage alone. To-day a good percentage of the beef eaten in New Mexico is fattened here on alfalfa, and in the future, as more land is placed under irrigation, the proportion will be largely increased, for the profits are necessarily large, the cost of the double journey of the corn-fed beef being so greatly in favor of the New Mexico farmer.

Another, and perhaps a greater, revolution is being brought about by alfalfa, enabling New Mexico farmers to breed high-grade and thoroughbred bulls. Formerly ranchmen were obliged to go to the Middle States for the large number of high-class bulls they required for the improvement of their herds. The acclimatization of these upon the Western plains was accomplished by enormous loss, chiefly owing to the great difference in climate and pasture. To-day, with the aid of alfalfa, breeding such cattle is fast becoming an important industry in New Mexico. The climate here being the same and the grass similar to that upon the great cattle ranges, the mortality during acclimatization is slight, and cattlemen willingly give a higher price for a New Mexico than for an Eastern bred bull.

Another important consideration to the advantage of this grass is that as cattle can largely depend upon the nutritious native grasses during the winter, the New Mexico farmer has three great factors in his favor: First, a higher value for what he raises; second, less cost of production; and third, a practically unlimited market at his door, with no heavy freight charges to pay when shipping to the buyer—a combination of advantages that must soon drive his Eastern competitor out of the market, and leave alone in his hands a large and profitable business.

For all these reasons there will, for a long time to come, be an immense demand for alfalfa for cattle-raising purposes.

The same conditions apply to hog raising, and with equal force. It will doubtless sound strangely to the Eastern farmer to be be told that hogs are here fattened for the market on alfalfa hay, but it is neverthe-

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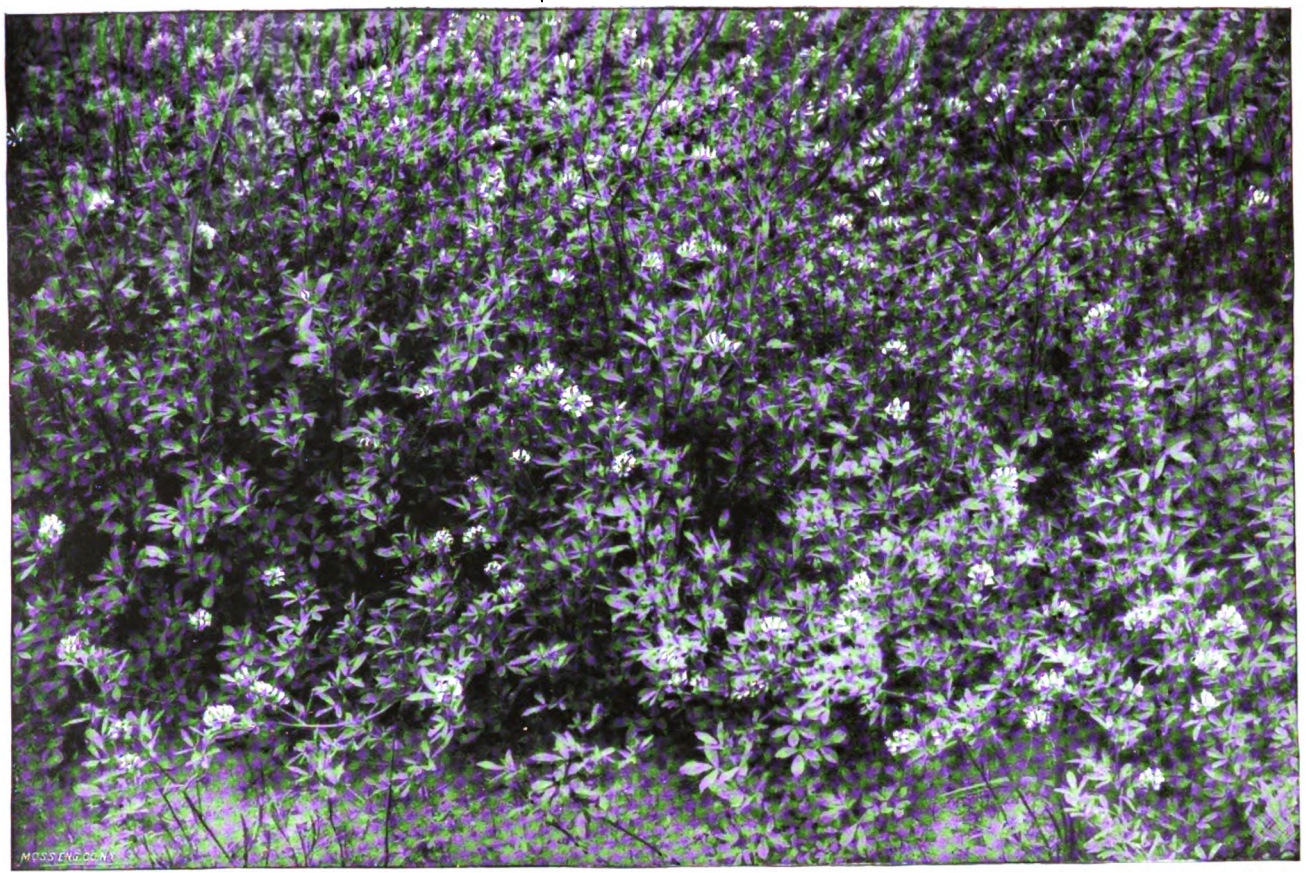

ALFALFA FIELD IN BLOOM.

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less true, and the meat thus produced is fully equal to, if not better than, corn-fattened pork. It seems to be as good for hogs as for cattle. It is becoming the rule here, and such hogs command high prices, as "hog cholera" is not known in these mesa regions.

Alfalfa is a perennial plant, and when once sown will last for many years. It is difficult to say how long it is profitable to keep the same field in alfalfa, but there are many instances of land that has borne crops of alfalfa for twenty years, and even for a longer period, without showing any signs of depreciation.

The seed is usually sown in February, on land already seeded to wheat, and oats are also frequently sown with the alfalfa in order to act as a shade to the young plants. But quite as good results have been obtained by sowing the alfalfa alone. The seed may also be put in the ground at the end of September. The young plants will soon appear above the ground and will continue to grow, in roots if not in leaf, during the greater part of the winter.

The cost of seeding an acre of land with alfalfa, from an estimate made in the Mesilla Valley, is as follows:

Plowing and harrowing	$5.00
Drilling seed	1.25
Making borders for irrigation	2.50
Twenty-five pounds of seed, at 8 cents	2.00
Total	10.75

The annual expense will be:

Cutting, raking, gathering, and stacking 3½ tons, at $1	$3.50
Irrigating six times, at 15 cents	.90
Water per acre	.75
Cleaning lateral ditches	.50
Baling 3½ tons, at $1.35	4.72
Hauling to railroad 3½ tons	3.50
Total	13.87

This makes the cost of the hay in the stack $1.60 per ton and not quite $4 baled and delivered on cars. Hitherto most of the alfalfa has been sold as hay, but much better returns are obtained by feeding it to live stock, for raising hogs, and dairy produce, which undoubtedly constitute the best products for the farmer. Alfalfa usually gives four cuttings in the year, but with care and plenty of water it would be possible to get five cuttings, yielding altogether five or six tons of hay. Owing, however, to a somewhat slovenly method of farming and the occasional lack of water, the writer places the average yield in the valley at 3½ tons per acre.

MAKES GOOD PORK.

Wherever alfalfa can be raised the best as well as the cheapest pork and bacon can be produced, for alfalfa gives growth to the muscle, making the lean meat that is the best and sells the best. And while growing in the alfalfa fields the hogs get the exercise needed for healthy development. Wherever it will grow it may be made a highly profitable crop, and one that will get out of the swine industry its biggest possible results.

RANGE GRASSES.

There are about thirteen or fourteen different plants indigenous to New Mexico that, curing on the stalk, without cutting or labor of man-

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comprise the great bulk of the valuable fattening food for range stock. A short description of each is given below.

The majority of the native, uncultivated forage plants of New Mexico are grasses, and the others, such as sotol and prickly pear, impress one as rather queer stock foods. The grasses of this class belong to two different groups—those which grow in the moist and alkaline soils of the valleys and those which are found on the mesas, and whose only supply of moisture is the little rain that falls during the year. Where irrigation is possible the best of all forage plants—alfalfa—can be raised in such great abundance that the cultivation of few other hay or fodder crops is attempted.

Hilaria mutica (Galleta grass).—This grass is found principally upon the high planes on both slopes of the Rocky Mountains. It is also known in localities as "black grama;" is a perennial grass, spreading by means of thick, scaly, underground stems, the roots of which are very nutritious, and stock seem to relish them.

Paspalum distichum (joint grass).—This grass is also known as "knot grass" in some localities. It is adapted to warm, moist soils of alkaline tendency, and in New Mexico is most abundant on low lands that are flooded occasionally, and upon the ditch banks late in the season. It is cut by the natives, to be fed green to stock before corn has matured. This grass is said to have some medicinal qualities.

Eriochloa punctata (Hamil).—Irrigated but uncultivated fields usually produce an abundant crop of the above-named grass each season. After the corn is "laid by," or during what little rain we have in the summer, this grass appears in the cornfields, along the ditch banks and the fence rows, and makes very rapid growth during the hot days of August and September. It produces an abundance of seed, and will reseed the ground each year. Land once seeded with it would produce a crop of fair hay after a crop of wheat has been taken off, and, so far as judged from an analysis, should be a valuable forage plant.

Panicum crus-galli (barnyard grass).—This rapidly growing annual is widely naturalized over the western and southern parts of the United States. As is indicated by its great geographical range, it has great powers of adaptation to climatic condition and is very variable, two well-marked varieties being recognized. It varies in height from a few inches to 5 feet and over, but the usual height is 3 feet. The natives cut this grass and feed it to their stock while green, before the corn matures. There is a difference of opinion as to the value of this grass as a hay crop. Some think it very valuable, while others think it worthless. It would be excellent to feed with alfalfa, and the two properly mixed would make a first-class combination.

Panicum obtusum (grapevine mesquite).—This is one of the native Southwestern grasses, found generally in the rich, loamy bottoms of the river courses, very rarely appearing on the mesas. It is a perennial which spreads rapidly, grows about a foot high, and produces a rather strict panicle of flowers. Stock seems to relish it. It does not grow tall enough to cut for hay, but would make a very fine pasture grass if supplied with water; its habits of growth and its great vitality would tend to prevent its being tramped out by stock.

Muhlenbergia texana (Texas drop-seed grass).—This is a perennial, growing upon the mesas and the dry rocky hillsides. It is sometimes known as the "grama grass," and is probably as valuable as any of the true grama grasses; it is also called "mesquite grass." This plant rarely exceeds a foot in height, but it is a grass that is much relished

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by stock on the range. Occasionally, when the summer rains have been heavy, it is cut, cured, and baled along with the grama grasses and others, and makes a very valuable hay.

Lycurus phalaroides.—This is a common grass, and is usually found on the rocky ridges and hills of the plains, and not rarely in the mountains. It has been collected at an altitude in New Mexico of over 6,000 feet above sea level. It grows in bunches under the most favorable conditions to a height of 18 inches. It would only be valuable for stock when fed with something containing much protein and fat.

Sporobolus airoides (bunch grass).—This is one of the commonest of all the native grasses in the western United States, and is found in all arid portions of the Rocky Mountain region from Montana to Texas and west to California. It is perennial, forming dense tussocks on flat, dry, alkaline plains. While it is of no value as hay, it is considered a good pasture grass in some sections, and it certainly is of great value upon those alkaline "flats," which will support few other kinds of vegetation, since it flourishes in such localities, and stock relish it.

Dr. Rothrock says that this grass and another closely related species (*S. cryptandrus*) furnish a fiber which might be utilized in making paper or cordage.

Bouteloua oligostachya (blue grama).—This is the common grama, and is also known as "mesquite grass" and is frequently mistaken for the "buffalo grass" (*Buchloe dactyloides*), with which it at one time formed the bulk of the pasturage upon the western plains and ranges. With the increased number of animals upon the ranges these grasses are being somewhat killed out, since they are very rarely allowed to seed, and thus few new plants are produced each season. It is a perennial, growing in small, dense clumps. It is not considered a very good grass for hay, but it is frequently cut and cured when standing with other grasses; but as a pasture grass it is probably the best of all native grasses. It is not easily tramped out and requires only a small amount of water. It grows rapidly and cures standing, and stock prefer it to almost any other rough food even when dry.

Bouteloua polystachya (six-weeks grama).—This is a common name applied to two species of the genus Bouteloua, which are quite common and similar in character, and the two usually appear together. Both are annuals, and spring up in the open mesa just after the summer rains, and grow very rapidly, maturing in about six weeks. Under the influence of these grasses, plains that were entirely bare will turn green and become valuable pasture land in a very short time. It is considered a very nutritious grass for stock.

Bouteloua eripoda (woolly-jointed grama).—This grass is also known as the "black grama," and forms a large portion of the native forage of this district. It is somewhat different from the other perennial gramas in habit, growing more like the six-weeks gramas. It does not grow in bunches or clumps, but is rather diffuse. It gets the name of "woolly-jointed grama" from the fact that the internodes or "joints" of the stems are thickly covered with silvery white hairs. Late in the season the stems become dark colored, and from this it gets the name of "black grama." The analysis of this grass indicates that it is not so good a food as most of the other grasses, since it is particularly poor in protein.

Bouteloua eurtipundula (tall grama).—The tall grama or "hairy mesquite grass" is perhaps the most widely distributed of any of the grama grasses, being reported from nearly all of the States west of

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the Mississippi River and from several east of it. It is usually found on rocky hillsides and along the bases of the mountains, though it is not uncommon in the valleys and on the higher parts of the mountain ranges, having a vertical range of three or four thousand feet. It cures as other native grasses do, and is considered a valuable feed by stockmen. Stock of all kinds eat it readily. It is frequently cut with other grasses by those who use and sell wild hay in this Territory. It has been recommended by good authority as an addition to the pasture grasses of Tennessee, and is said to be cultivated to some extent in the Southern States and to be much prized.

Eremochloe kingii Watson.—This is a small grass. It seems to be well fitted to the climatic conditions of high, dry, and hot plains. It produces a crop every season, no matter how little rain falls. Its nutritive ratio of 1 to 11.6 is much better than that of corn stover, and indicates that it may be a moderately good food. The plant is small and tough, and stock seem to eat it only when there is nothing else left. Its main value appears to be in the fact that it is almost sure to produce a crop when other grasses fail.

Distichlis spicata (salt grass).—This is the true salt grass (also known as alkaline grass), and it certainly deserves either name, since it forms a thick sod over these marshy, alkaline "flats" and "draws," which are of comparatively frequent occurrence in this Western country. It grows well where alkali covers the surface of the land with a thick, white crust, provided there be sufficient water to supply its needs. It is cut in some localities, making a poor hay, but in this Territory, as far as is known, it is only used for a pasture grass. Animals eat it readily while it is green, but it should not be fed by itself.

A description of a number of other varieties of forage plants might be given if it were not for lack of space, and I will only mention the names of a few others, such as the Millo maize and Kaffir corn, Italian millet, Pearl millet, alfalfa (on which quite an article appears in this book), mesquite, tornillo, prickly pear, and sotol.

I mention these grasses more fully than I would do, because in many instances the newcomer in New Mexico is impressed by the apparently barren stretches of mesa which surround the valleys. He is told that stock raising is one of the principal industries of our Territory, and he immediately wonders where the food of all these cattle, sheep, and horses is obtained. But the dry, barren mesa produces much valuable forage, and, with the increase in numbers of the stock upon the range, the animals have acquired the habit of eating anything in the way of vegetable matter which is at all digestible or nutritious.

SOME GOOD THINGS ABOUT ALFALFA.

Alfalfa benefits lands for cultivation by opening up channels through compact substrata to a considerable depth, allowing the entrance of water and air. The roots have penetrated the most compact soil, and their power to enter through clay and hard streaks is great enough to make them excellent subsoilers. The soil of a field which has been planted to alfalfa has practically been deepened for subsequent sowing in wheat. We do not know of any observations having been made upon the root development of wheat in prairie soils, nor as to the depth to which they penetrate in the virgin soil, where there is a very fine, compact, and tough substratum, the result of settling and compacting of ages.

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To plant such soil to alfalfa is to perforate this compact subsoil with numerous channels for the passage of water and air and for the entrance of other roots, when those of alfalfa have rotted. The work done by alfalfa roots in accomplishing this is very great, but this work is to benefit the soil, to the advantage of the succeeding crops and to the profit of the owner, being the cheapest labor as well as the best directed and most efficient of any which he can employ. The great benefit accruing to worn-out wheat fields by being sown to alfalfa is a matter assumed to be a fundamental fact of New Mexico farming.

At average prices alfalfa hay does not bear transportation, except it can be converted into some more marketable form; and this has been the case for years. Until recently the fattening of steers was profitable, and consequently a favorite manner of marketing alfalfa hay. The hay was fed in the field, the animals pasturing and feeding on the ground upon which the crops grew; this was practically equal to returning the crop to the soil from which it was taken. Of course, the practice is not without some drawbacks; still the crowns were not trampled to death and the voidings of the animals were equivalent to manuring the surface soil with the crop grown upon it. There is no question that this is not an economical way of treating the manure; but, in spite of the losses, a large amount of the manurial elements of the crop were returned to the soil.

This does not hold for sheep feeding, and unless farmers pay more attention to the manure of the sheepfold, some of the beneficent effects of alfalfa growing observed in the past will be wanting in the future. The care of this manure is an important question to the people of this country. Alfalfa is a heavy feeder and lays a tax upon the soil for every benefit it bestows. The apparently wasteful methods of the past have tended to gain all the advantages from growing this plant and to obviate any disadvantages. If the same good results are to be maintained under a changing system of feeding, care must be exercised, and the manurial equivalent of the crop must be returned to the soil.—[Field and Farm.]

OUR HOME MARKETS.

The manifold resources of New Mexico command notice from the home seeker and the immigrant, among other reasons, because it will be years before the Territory of New Mexico will produce sufficient to fill the demand of the home market. Pastoral and allied industries are inviting to the young farmer of the East who is seeking a broader field in which to toil, and where his remuneration will be more munificent than the Central and Eastern States allow.

The mineral wealth of the Territory and the surrounding States puts a higher premium on agriculture in New Mexico than is possible in Illinois, Indiana, or Ohio, for, while those States are fully equipped for horticulture and agricultural successes by excellence of soil and ample humidity, they are devoid of that large consuming element that produces no breadstuffs, yet delves into the earth and secures wealth which the producer of grains, fruits, and clothing needs as a reward for his effort. It is only in recent years that the manufacture of flour commenced in Colorado and has since partly supplied the demand in New Mexico. Previous to that time the supply was drawn from the East, 200 carloads coming to Las Vegas in a single year, and to other towns in like proportion. Every day in the year now trains roll into the Territory from the East, laden with the products of other States which can be made or grown within our Territory. There is an actual demand within the Territory for 20,000,000 pounds of flour annually. Over 8,000 tons of corn are used, and the same general facts are applicable to the other articles of domestic consumption. In every instance there is an actual home market for everything the farmer and fruit grower raises. It is waiting for the home seeker and immigrant to supply it from the soil of the Territory of New Mexico.

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No one has taken the trouble to raise such articles in sufficient quantities in the past. But the era of advancement in this direction having set in, only needs to be pursued a few years, when the industry of California will be repeated, and New Mexico will be shipping fruit to Europe. Now is the time for a start for many a young farmer from the older sections of the Union which have failed to give reward for industry. If he will head for the valleys of New Mexico, where new districts are being put under irrigating canals by heavily capitalized companies, he will be convinced, after investigation, that a sure road to wealth, independence, and health will have been entered upon when he concludes to cast his fortune with the coming State of New Mexico.

THERMAL SPRINGS OF NEW MEXICO.

Excepting the famous Yellowstone National Park, situated in the northwest corner of Wyoming, there is no other locality outside the Territory of New Mexico that contains so many natural thermal springs. This fact is not generally known throughout the States, and I avail myself of the opportunity to say a few words about these health shrines of nature's own furnishing, so frequently sought by the unfortunate sufferer from disease. Many persons not informed upon the natural resources of their own country annually flock abroad to seek relief from the waters of the various European "spas." Many of these persons might be induced to visit the great natural springs so numerous in this Territory could the matter of their medicinal merit be brought to notice in such a way as to show them that what they seek abroad can readily be found at home, and that in curative properties the natural mineral springs of New Mexico excel many of those of European repute.

Accurate analyses made by competent chemists show the composition of most of the springs found in New Mexico to be superior in many respects to those enjoying the highest reputation in Europe and in other countries. Many of these places are far removed from the general line of travel, but those best known to-day are easily accessible to the tourist and health seeker, and are reached by good roads and stage lines. Many of them are equipped with modern hotels and bathrooms, good food, good service, healthful surroundings; in fact, ideal conditions to carry out a line of treatment where regularity, isolation, physical and mental rest are important factors. It would be a work of supererogation to attempt an enumeration of the many afflicted persons who have visited these springs, taking a course of the waters, and returning to their homes greatly benefited in health. A glance at the chemical composition of many of these waters will show that they compare favorably with many of those most sought in various parts of the world.

The geologic processes are so recent in New Mexico that nearly every county in the Territory has its healing, hot, or mineral springs. The purpose of this article is only to give a few facts concerning the more accessible resorts. Many important places are necessarily omitted, because the average tourist would be unable to visit them.

In geographical order the first to be mentioned are—

FOLSOM HOT SPRINGS.

Situated near Alps, a station on the Denver, Fort Worth and Texas Railroad, 59 miles south of Trinidad, on the summit of the Raton range of mountains, close to the extinct volcano of Capulin, in Colfax

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County, near the northern boundary of the Territory. The altitude is about 6,500 feet, and the location is very beneficial for consumptives. They have fine medicinal properties and promise to become of prominence.

LAS VEGAS HOT SPRINGS.

In San Miguel County, at the mouth of the picturesque Gallinos Canyon, on the banks of the Gallison River, is situated the Las Vegas Hot Springs, famed throughout the length and breadth of the land for their curative virtues in a multitude of diseases.

The springs are twenty-two in number, and from analyses made by Prof. F. V. Hayden, of the United States Geographical Survey, the following is extracted:

Constituents.

	1.	2.	3.
Sodium carbonate ..... per cent..	1.72	1.1	5
Magnesium carbonate ..... do....	1.08	10.6	10.43
Sodium sulphate ..... do....	14.12	15.43	16.21
Sodium chloride ..... do....	27.26	24.37	27.34
Potassium ..... do....	Trace.	Trace.	Trace.
Lithium ..... do....	St. trace.	St. trace.	St. trace.
Silicic acid ..... do....	1.04	Trace.	2.51
Iodine ..... do....	Trace.	Trace.	Trace.
Bromine ..... do....	Trace.	Trace.	Trace.
Temperature ..... degrees F..	130	123	123

In its chemical composition this water resembles in many respects the waters of the famous hot springs of Teplitz, in Austria, while in its two chief active constituents, the carbonate and sulphate of sodium, it may recall the somewhat analogous, though very much stronger, waters of Carlsbad, justifying in a degree the name often given it of "dilute Carlsbad water." This dilution, however, is more frequently a benefit than a disadvantage, for it permits a larger amount of the water to be taken, thus securing the valuable solvent and eliminating powers of the water itself, together with the remedial virtues of its mineral constituents.

OJO CALIENTE (HOT SPRINGS).

These celebrated hot springs are located in the midst of the ancient Cliff Dwellers, 25 miles west of Taos and 50 miles north of Santa Fe, N. Mex., and about 12 miles from Barranca Station, on the Denver and Rio Grande Railway, from which point a daily line of stages run to the springs. The temperature of these waters is from 90° to 122° F. The gases are carbonic. Altitude, 6,000 feet; climate, very dry and delightful the year round. There is now a commodious hotel for the convenience of invalids and tourists, and the reputation of these wonderful medicinal waters is fast spreading. These waters contain 1,686.34 grains of alkaline salts to the gallon, being the richest alkaline hot springs in the world. An analysis of these waters shows a total of 288.09 parts in 100,000 divided as follows:

Sodium carbonate	196.95
Calcium carbonate	4.20
Iron carbonate	20.12
Sodium chloride	40.03
Arsenic	10.08
Lithium carbonate	1.22
Magnesium carbonate	6.10
Potassium sulphate	5.29
Silicic acid	

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JEMES HOT SPRINGS

Are in Bernalillo County, in Santiago Canyon, being a branch of the Jemes Creek, which 9 miles south connects with another branch running through Guadaloupe Canyon. To reach them one has to travel from Santa Fe by wagon road to Pena Blanca, 27 miles distant west, crossing the Rio Grande there, and thence keeping a western course through the foothills of the Valles Mountains to Jemes pueblo, 26 miles; from there it is 13 miles to the first group of springs, at Archuleta post-office; or from Bernalillo, on the Atchison, Topeka and Santa Fe Railroad; also by wagon road past Santa Ana and Zia (or Silla) pueblos to San Ysidro and thence to Jemes pueblo, where this road and the former join, distant 27 miles.

Both roads are sandy, but the latter especially so, running for about 13 miles through Jemes Canyon.

A much better road, running from Archuleta north and northeast through the mountains and ending at Espanola, has recently been constructed.

There are several groups of hot springs in Santiago Canyon, but those at Archuleta, and 2 miles farther north, are most frequented. At Archuleta are ample hotel accommodations. Many health seekers prefer the "upper group" and camp there. At both places the scenery is enchanting and the atmosphere dry and healthy.

The lower springs, at Archuleta post-office, have an altitude of 6,620 feet above sea level. Limestone and sandstone of the Carboniferous age form the sides of the canyon, 1,000 feet high, often changed from their original position by volcanic materials. There are here:

1. A geyser with an opening of 1 square foot, a temperature of 168° F., running about 50 gallons a minute, with escaping carbonic acid and deposits of white carbonate of lime.
2. A spring of 130° F. with free carbonic acid and red-brown deposits.
3. A spring of 119° F. with "alga" (cryptogamic water plants). A black sulphate of iron forms on them, a result of the action of sulphureted hydrogen upon carbonate of iron and oxide of iron in the alga. The sulphureted hydrogen is a product of the reduction of gypsum.

There are more springs, with a temperature from 102° to 108° F. The total salts in 100 parts of water amount to 0.2401 parts of sodium, lime, and magnesia. These springs are especially beneficial to rheumatic diseases.

The upper group, 2 miles from Archuleta, in the same canyon, consists of 42 springs. Their elevation is about 6,740 feet above sea level and their temperature varies from 70° to 105° F.

They flow from caves of carbonate of lime, some of which are 20 feet in height. Combined they form a dam or dike 30 feet high and 200 feet long. The springs contain 37.26 parts solids in 100 parts water, mostly chloride of sodium and sulphate and carbonate of soda, lime, and magnesia. They greatly resemble the famous Marienbad.

Besides the hot springs, north of the upper group are cold mineral springs. Halfway between the two groups is an extensive ruined pueblo.

CHERRYVILLE SPRINGS.

In Socorro County, at Cherryville, is the next occurrence of noted springs. These are found near the head of the cañada or falls of the

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Alamosa, whence Geronimo started out on his famous raid. They are accessible by stage from Engle, a station on the Atchison, Topeka and Santa Fe Railroad. They are on the eastern slope of the Black Range. The temperature is 130° F. and the altitude 6,540 feet.

GILA HOT SPRINGS.

In the southwestern part of Socorro County, on the west of the Gila or Diamond Creek, as it is called, is a group of springs, at 5,545 feet altitude, that are easily reached by wagon from Silver City. The temperature is 130° F. and they carry similar ingredients to the Jemes Springs.

APACHE TAJOE SPRINGS.

Four miles from Whitewater, on the Atchison, Topeka and Santa Fe Railroad, are also found some good springs of 97° F. They are in Grant County, 30 miles north of Deming.

HUDSON SPRINGS.

Twenty-four miles north from Deming, and within 3 miles of Hudson, on the Santa Fe road, are several good springs. These springs are widely known and much frequented, both on account of their medicinal value and the lovely climate and beautiful scenery.

The average temperature of the springs is 130° F. and their altitude 5,782 feet above sea level. The main spring is a mound of soda, lime, and magnesia, in the center of which is a large depression containing the permanently boiling water which has effected many cures of rheumatism and kidney and blood diseases. The water contains in 1 gallon the following solids:

	Grains.
Silica	1.552
Alumina and oxide of iron	.530
Carbonate of lime	4.448
Carbonate of magnesia	2.624
Sulphate of soda and potassium	13.547
Chloride of soda	2.286
	24.987

Some other undeveloped springs are about 3 miles north of Hudson Hot Springs.

It remains to be said that close to the western boundary of the Territory are several other locations of hot springs, of which one is about 10 miles southwest of Zuni and one in the valley of the San Francisco River, the latter at an altitude of 5,630 feet above sea level and having an average temperature of 84° F., largely used by the Indians and the people of the vicinity, respectively.

AZTEC SPRINGS.

This is a cold-water spring situated 4 miles east of Santa Fe. From the surrounding hills and ridges a magnificent view is had of the country for many miles, including the city of Santa Fe, the valley of the Rio Santa Fe, and portions of the valley of the Rio Grande del Norte, together with the magnificent mountain ranges in different directions.

Col. D. L. Huntington, surgeon, U. S. A., and curator to the United States Medical Museum, says of this spring: "The water contains 18 grains to the gallon of solid material, and it resembles many of t.

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celebrated German springs, and would be found very useful in such diseases as catarrh of the bladder and all forms of dyspepsia and intestinal indigestion. The water is also useful as a gentle and constant tonic."

Analysis of this water made by F. W. Clark, chief chemist of the Smithsonian Institution, Washington, D. C., shows it to contain the following per 1,000 parts:

Silica	0.220
Carbonate of calcium	1.538
Magnesium	.605
Sodium chloride	.225

With enough carbonic-acid gas to retain the carbonates of calcium and magnesium in solution as bicarbonates.

Such healing waters, taken in connection with the pure, dry, and bracing climate of the mountains, should surely prove a boon to those affected with many forms of disease, and the attention of physicians throughout the country is invited to the many merits they possess in the treatment of numerous forms of disease.

CLIMATE.

REPORT OF THE NEW MEXICO CLIMATE AND CROP SECTION.

The Territorial assembly of 1898 renewed the annual appropriation of $700 for the purpose of printing the data collected by the service. All other expenses of equipment, distribution, salaries, etc., are borne by the United States Weather Bureau.

During the year ending June 30, 1899, 8 stations were established and 5 discontinued. At the close of the year there were 41 stations reporting to the central office at Santa Fe, which included 2 military posts, 5 stations of the Southern Pacific Railway, and 34 volunteer observation stations. Every county in the Territory is represented in the reports of the section, excepting Taos and the new county of Otero. In the latter county stations have been equipped at both Alamogordo and Fresnal, but as yet neither is in active operation. During the year the section has received meteorological reports from Dr. William Curtiss Bailey, medical superintendent of the Montezuma Hotel at Las Vegas Hot Springs. Dr. Bailey equipped the station at private expense, and the regular and careful reports from this noted health resort prove a valuable addition to the service.

There have been printed and distributed during the year 10,000 weekly climate and crop bulletins, 6,000 monthly reports, and 800 annual summaries. The weekly bulletins, issued during the crop season, are widely copied by the press of the Territory and frequently by outside papers. Their distribution by this means is estimated to reach more than 20,000 readers weekly.

The central office is continually receiving applications for meteorological data from citizens of other sections who contemplate settling or sojourning in the Territory. The proposed establishment of sanitariums for the treatment of tuberculosis at Fort Stanton and Fort Bayard by the United States Marine-Hospital Service has set the seal of approval of the highest medical authorities on the superior climate of New Mexico.

CROP REVIEW, SEASON OF 1898.

The season opened with March having a normal precipitation, but slightly cooler than usual. The temperature, however, was quite steady, and favorable for farm work. In southern sections wheat was sown in the early part of the month, but in the north little work was done before the 15th. During the last week in southern localities apricots and peaches were somewhat injured by frost, but in the north, where little advance had been made, the fruit was uninjured. Stock came through the winter in good condition, and feed on the ranges started out well. Water for irrigation purposes was plentiful.

April was very favorable, being both warmer and wetter than usual. There was a slight frost on the 1st and 5th, but little damage resulted, as crops were not sufficiently advanced. In southern sections wheat had a good growth by the end of the month, corn planting was well begun, and fruit trees were in full bloom

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over the Territory generally. Alfalfa and grass on the ranges were making excellent growth.

The month of May was dry and cool. A frost on the 5th and 20th, in upper central sections, nipped tender garden plants and unprotected vineyards, and a killing frost on the 21st destroyed much of the fruit of San Juan County and vicinity. The drought caused little harm, as irrigation water was abundant; but the low temperature and absence of moisture retarded the growth of vegetation. During the last of the month corn planting generally was suspended, awaiting rains. In southern sections sugar-beet planting was carried on during the month under favorable conditions. The first cutting of alfalfa was made on the 15th in southern counties. Toward the close of the month stockmen were experiencing some difficulty in finding water for their stock, and ranges were beginning to suffer.

Although June averaged cooler than usual, the last ten days of the month were much warmer than normal. The protracted drought was generally broken, beginning with the 5th, and the month thereafter proved unusually favorable for stock and farming interests. Corn planting, which had been suspended, was resumed during the second week under most favorable conditions. Oats, wheat, and barley made very good growth, and the hot, sunshiny weather of the last ten days ripened grains so rapidly that by the close of the month some in the southern section had begun to harvest. Fruits also matured rapidly, and during the last week of June large consignments of plums, peaches, and cherries were being shipped from southern orchards. The effects of the May frosts became more apparent on fruits of northern sections, and it was expected that the total output would be greatly reduced.

The average precipitation for July was about an inch and a half greater than the usual amount, so that although the temperature was slightly below the normal the month as a whole was unusually favorable to crop growth. During the first week harvesting wheat and oats was well begun, but owing to showery weather some trouble was experienced in properly securing the crop. In northern counties the second cutting of alfalfa was well begun by the 15th, but much of this also was damaged by the rains. Corn made excellent growth during this wet season, and by the close of the month had more than made up for its late start. All garden truck, such as beans, peas, early potatoes, etc., were abundant in southern markets by the 15th. The marked feature of the month was the period of heavy showers during the second week, which caused "washing" of standing grain, and interfered greatly with harvest. In many localities it was impossible to secure the grain which had been cut, and much of it was expected to sprout in shock. The damage was not so great as was anticipated, however, as the dryer weather of the latter part of the month brought more favorable conditions, and permitted many farmers to clean up their harvesting to good advantage. In the northern section, however, much of the grain and of the second crop of alfalfa still remained uncut. Fruits were turning out very satisfactorily. At the close of the month early grapes were ripe in some localities, and melons were being shipped from southern fields. In northern counties the larger tree fruits were coming to market. Sugar beets continued very promising. The weather during this period was particularly favorable to stock interests, there being sufficient water and excellent feed.

The average temperature for August was about 2.5° below the normal. The rainfall also was a quarter of an inch below the usual amount, and occurred as light showers rather well distributed over the Territory and during the month. Toward the close of the month, however, southern districts suffered considerably from drought. Wheat, barley, and oats harvests in southern sections were well secured by the 10th. As a rule corn continued doing well, but toward the close of the month suffered somewhat from lack of rain in nonirrigated fields. By the close of the second decade early fruits of all kinds, melons, and early varieties of grapes were abundant in southern markets, and also were in northern markets by the end of the month. Sugar beets in general continued particularly promising, although during the latter part of the month some fields suffered considerably from drought. At this time fears were entertained that there would be a scarcity of winter feed on northern ranges. With few exceptions there was sufficient water throughout the month for irrigation purposes.

September was an unusually dry and sunshiny month. The greater part of the month was much warmer than usual, although the average temperature for the whole month was about 1° below the normal. This average deficiency was caused by the cold spell from the 9th to the 13th, when the first killing frost occurred throughout northern portions, causing much damage to potatoes, tomatoes, melons, etc., and also injuring alfalfa and unripe corn. The average precipitation was a little less than three-quarters of an inch, being about an inch below the aver-

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age amount for this month. Nearly all of this rain fell during the cold snap, the first week and the period after the 13th being dry, and with cloudless skies. The third cutting of alfalfa was secured during the first week in southern counties, and in northern sections during the third. In northern counties corn cutting was in progress during the third decade, and in some localities ground was being prepared for fall planting. Notwithstanding the frosts, garden vegetables continued in abundance. Sugar beets were maturing very satisfactorily, the crop promising to be the finest yet grown. The larger tree fruits, as apples, pears, peaches, nectarines, etc., matured very satisfactorily, and in most sections were unusually fine although the yield was somewhat less than usual. Grapes also were reported as being of an unusually fine quality, although the yield was below that of some former years. As a rule the feed on ranges held out very well, and stock continued in prime condition, but the protacted drought caused some anxiety as to the prospects for winter feed, especially among northern stockmen. Water for irrigation purposes, with the exception of a few isolated cases, continued sufficient notwithstanding the drought during September, and the season of 1898 closed as one of the most prosperous New Mexico has known.

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Climatological data for the year 1898.

Stations.	Counties.	Elevation (feet).	Temperature, in degrees Fahrenheit.						Precipitation in inches.							Number of rainy days.	Sky.			Prevailing direction of wind.
			Length of record (years).	Annual mean.	Highest.	Date.	Lowest.	Date.	Length of record (years).	Total for the year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.		Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	
Albert	Union	4,700	7	56.1	106	June 25	4	Dec. 9	7	14.51	4.52	July	0	Feb	12.7	47	225	102	38	.....
Albuquerque	Bernalillo	5,008	22	55.5	104	June 29	0	Jan. 25	23	6.39	1.25	July	.12	May	22.4	39	.....	.....	.....	S.
Alma	Socorro	5,500	.....	54.2	100	July 28	— 5	Jan. 24*a*	.....	17.26	4.00	July	0	Oct	.....	.....	.....	.....	.....	SW.
Aztec	San Juan	5,590	.....	48.4	99	July 29	—16	Jan. 25*b*	.....	10.16	2.47	July	0	Oct	28.5	52	.....	.....	.....	W.
Bernalillo	Bernalillo	5,260	.....	55.7	99	June 26*c*	3	Dec. 14	.....	5.82	1.38	Aug	T.	Sept	13.7	32	315	44	6	E.
Bluewater	Valencia	6,200	.....	47.8	100	July 1	— 8	Jan. 25	.....	8.07	3.72	July	0	(*d*)	13.0	24	.....	.....	.....	W.
Buckman's	Rio Arriba	8,500	.....	38.3	92	June 29	—30	Dec. 22	.....	14.51	4.12	July	.12	Sept	62.0	76	195	151	19	W.
Clayton	Union	5,178	.....	54.0	100	July 28	— 1	Dec. 8	.....	14.05	3.15	June	T.	Mar	22.3	.....	.....	.....	.....	S.
East Las Vegas	San Miguel	6,450	11	49.3	92	June 29	— 6	Jan. 22	11	16.99	4.63	July	.21	Feb	25.7	78	287	52	26	SW.
Eddy	Eddy	3,122	5	59.8	101	June 2	10	Dec. 9	5	16.92	5.51	June	0	Oct	6.5	41	211	65	89	SE.
Engle	Sierra	4,750	.....	55.0	101	July 29	4	Dec. 13	.....	14.38	4.40	Aug	0	(*e*)	17.0	25	198	146	21	SW.
Espanola	Santa Fe	5,590	.....	50.0	100	June 29	—15	Jan. 25	.....	7.78	2.22	July	0	Feb	15.5	36	261	97	7	S.
Folsom	Union	6,000	.....	48.3	92	June 29*f*	8	Jan. 24*g*	.....	17.85	3.48	July	.12	Mar	80.1	63	188	153	24	SW.
Fort Bayard	Grant	6,040	23	54.2	96	July 28	— 1	Jan. 25	23	16.21	6.56	July	0	(*h*)	19.0	52	.....	.....	.....	SW.
Fort Union	San Miguel	6,750	38	48.5	99	June 29	— 2	Dec. 23*i*	38	20.19	5.74	July	.02	Mar	21.7	54	.....	.....	.....	SW.
Fort Wingate	Bernalillo	6,649	35	50.4	100	June 30	—10	Jan. 25	35	13.62	3.83	July	0	Oct	47.3	.....	.....	.....	.....	W.
Galisteo	Santa Fe	6,074	.....	51.6	98	July 19	1	Dec. 31	.....	9.30	3.41	July	0	(*j*)	19.5	.....	.....	.....	.....	W.
Gallinas Spring	San Miguel	5,272	13	54.0	101	June 29	0	Jan. 22	13	12.13	4.00	July	T.	Oct	18.0	48	219	72	74	W.
Gila	Grant	4,040	.....	58.7	103	July 28	0	Dec. 13	.....	15.22	3.18	July	T.	Oct	13.5	61	240	85	40	SW.
Hillsboro	Sierra	5,100	.....	.....	104	June 24	9	Jan. 22	6	10.54	3.31	July	0	Oct	13.5	.....	.....	.....	.....	W.
La Luz	Donna Ana	4,750	.....	58.8	96	June 16*k*	14	Dec. 10	.....	19.23	6.30	July	T.	(*l*)	5.6	52	216	137	12	SW.
Las Vegas Hot Springs	San Miguel	6,767	.....	.....	98	June 28	0	Dec. 10*m*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	SSW.
Los Lunas	Valencia	4,900	6	.....	.....	.....	—10	Jan. 22	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lower Peñasco	Lincoln	5,250	.....	55.1	99	June 26	3	Dec. 9	.....	20.35	7.40	July	T.	Oct	22.6	47	.....	.....	.....	W.
Mesilla Park (formerly Las Cruces).	Donna Ana	3,500	11	57.2	102	July 29	7	Jan. 17*n*	11	11.21	2.43	Aug	T.	(*o*)	.....	50	191	108	66	W.
Monero	Rio Arriba	7,356	8	.....	.....	.....	—20	Jan. 25*p*	6	.....	4.49	July	.11	Aug	27.0	.....	.....	.....	.....	W.
Puerto de Luna	Guadalupe	5,350	6	56.8	102	July 27	4	Dec. 31	6	13.98	5.51	July	0	Feb	19.0	.....	.....	.....	.....	W.
Raton	Colfax	6,400	.....	48.5	98	Aug. 15	— 8	Dec. 12	.....	13.97	4.00	July	0	Mar	15.7	.....	.....	.....	.....	S.
Rincon	Donna Ana	4,030	.....	59.1	102	July 29	10	Dec. 31	.....	11.13	3.62	July	0	Feb	.....	20	284	39	42	W.
Roswell	Chaves	3,570	6	57.2	100	July 23	2	Jan. 20	6	20.62	6.53	July	T.	(*r*)	17.0	43	189	107	69	SW.
San Marcial	Socorro	4,554	.....	.....	100	June 4	2	Dec. 12*s*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	S.
Santa Fe	Santa Fe	6,998	24	47.9	91	June 29	— 6	Jan. 25	24	12.97	4.00	Aug	.18	Sept	21.9	73	201	103	61	SE.
Shattuck's	Eddy	6,000	.....	.....	100	May 25*t*	— 2	Dec. 8*v*	.....	.....	.....	.....	.....	.....	38.5	.....	.....	.....	.....	SW.
Socorro	Socorro	4,600	7	.....	.....	.....	4	Jan. 24*w*	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	NW.
White Oaks	Lincoln	6,470	.....	51.2	95	June 26*x*	— 3	Jan. 16	.....	22.47	5.60	July	0	May	31.5	59	261	50	54	W.
Winsors	San Miguel	8,000	.....	40.6	86	June 28*y*	—14	Jan. 15	.....	23.19	5.10	July	.71	Mar	.....	.....	.....	.....	.....	W.S.

a And Dec. 13. *b* And Dec. 31. *c* And June 29. *d* Mar., Sept., and Oct. *e* Feb. and Oct. *f* And June 30 and July 27. *g* And Jan. 25, 26, and Dec. 31. *h* Feb., May, Oct.
i And Dec. 30. *j* Mar., May, Oct. *k* And June 25. *l* May and Oct. *m* And Dec. 31. *n* And Jan. 22. *o* May and Oct. *p* And Jan. 26 and Dec. 30.
r Mar. and Oct. *s* And Dec. 14. *t* And July 27. *v* And Dec. 9 and 23. *w* And Dec. 14. *x* And July 28. *y* And June 29 and July 28, 29.

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Voluntary observers.

Stations.	Observers.	Stations.	Observers.
Albert	A. Knell.	La Luz	Mrs. H. T. Findley.
Albuquerque	Prof. M. Custers.	Las Vegas Hot Springs.	Wm. C. Bailey, M. D.
Alma	Wm. French.		
Aztec *a*	Dr. T. J. West.	Lordsburg	Agt. So. P. R. R. Co.
Bernalillo	Bro. Gabriel.	Los Lunas	Richard Pohl.
Bluewater	J. S. Van Doren.	Lower Penasco	J. F. Hinkle.
Buckman's	H. S. Buckman.	Mesilla Park	New Mexico Agr. College.
Clayton	G. W. Guyer.		
Deming	Agt. So. P. R. R. Co.	Monero *c*	D. W. Caldwell.
East Las Vegas *b*	Dr. F. H. Atkins.	Olio	Cyril James Collyer.
Eddy	Prof. E. M. Skeats.	Puerto de Luna	P. R. Page.
Engle	E. J. Westervelt.	Raton	W. M. Oliver.
Espanola	Jim Curry.	Rincon	A. J. Coats.
Folsom	Jackson Tabor.	Roswell	W. M. Reed.
Fort Bayard	Post Surgeon.	San Marcial	J. W. McCoach.
Fort Union	M. C. Needham.	Santa Fe	U. S. Weather Bureau.
Fort Wingate	Post Surgeon.	Shattuck's	J. S. Shattuck.
Galisteo	Sylvester Davis.	Socorro *d*	Prof. W. H. Seamon.
Gallinas Spring	Jas. E. Whitmore.	Springer	Dr. L. Hines.
Gila	Chas. H. Lyons.	White Oaks	Urbain Ozanne.
Hillsboro	Frank I. Given, M. D.	Winsors	H. D. Winsor.

Forecast display stations—Distributing center, Santa Fe.

Stations.	Displaymen.	Stations.	Displaymen.
Albuquerque	Postmaster.	Raton	A. L. Hobbs.
Clayton	G. W. Guyer.	Roswell	W. M. Reed.
Eddy	P. V. & N. E. Ry.	Silver City	Prof. A. E. Bennett.
Las Vegas	City Marshal.		

Climate and crop correspondents.

Stations.	Correspondents.	Stations.	Correspondents.
Alameda	Arthur Betts.	Las Cruces	C. Thompson.
Albert	H. M. Hansom.	Los Alamos	Wm. Frank.
Albuquerque	M. Custers.	Los Lunas	Richard Pohl.
Allison	Wm. Taylor.	Lower Gila	J. E. Casper.
Alma	Wm. French.	Lower Penasco	J. F. Hinkle.
Aztec	Prof. C. E. Mead.	Mangus	Thos. J. Clark.
Bernalillo	Brother Gabriel.	Manzano	J. F. Chaves.
Bluewater	J. S. Van Doren.	Ocate	E. M. Cosner.
Buckman's	H. S. Buckman.	Ojo Caliente	A. Joseph.
Clayton	G. W. Guyer.	Old Albuquerque	A. Montoya, jr.
Eddy	L. O. Fullen.	Olio	C. J. Collyer.
Eddy	A. L. Hilton.	Puerto de Luna	P. R. Page.
Engle	E. J. Westervelt.	Raton	W. M. Oliver.
Espanola	Jim Curry.	Rincon	C. H. Raitt.
Estalina Springs	E. A. Clemens.	Roswell	W. M. Reed.
Farmington	J. G. Willett.	Santa Fe	A. Boyle.
Fort Union	M. C. Needham.	Shattuck's	J. S. Shattuck.
Frisco	C. Hightower.	Silver City	D. C. Hobart.
Galisteo	Sylvester Davis.	Socorro	Prof. W. H. Seamon.
Gallinas Spring	J. E. Whitmore.	Springer	Dr. L. Hines.
Gila	Chas. H. Lyons.	Tularosa	J. H. Lightfoot.
Hillsboro	R. A. Nickle.	Valley Ranch	H. M. Strong.
La Belle	Frank Staplin.	White Oaks	Urbain Ozanne.
Las Vegas	F. O. Kihlberg.	Winsors	H. D. Winsor.

a Prof. C. E. Mead, from July.
b Miss Inez D. Rice, from October.
c Mrs. C. D. Caldwell, from August.
d Prof. F. A. Jones, from September.
Forecasts are bulletined at all stations along the Pecos Valley and Northeastern Railroad.

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Annual summary of meteorological data Santa Fe, N. Mex., 1898.

Month.	Pressure.			Moisture. a				0	Wind.				
		Extremes.		Dew-point.		Relative humidity.							
	Monthly mean.	Maximum.	Minimum.	6 a. m.	6 p. m.	6 a. m.	6 p. m.	Average daily cloudiness, to 10.	Average hourly velocity.	Maximum velocity.	Direction at time of maximum velocity.	Prevailing direction.	Percentage of sunshine.
January	23.17	23.55	23.73	11	9	67	45	4.5	5.8	27	SW.	NE.	55
February	23.27	23.51	22.97	17	22	63	43	2.8	5.4	26	N.	NE.	83
March	23.15	23.38	22.88	15	9	56	29	3.3	7.1	36	SW.	SW.	74
April	23.27	23.50	22.89	23	17	51	30	4.1	8.1	36	SW.	SE.	71
May	23.21	23.48	22.99	25	16	47	20	4.2	8.3	38	SW.	SW.	79
June	23.32	23.50	23.16	37	27	52	28	4.1	6.1	30	SE.	SW.	70
July	23.39	23.55	23.26	48	44	67	43	6.3	5.7	34	NE.	SE.	61
August	23.39	23.54	23.21	46	43	66	38	4.5	5.8	25	S.	SE.	72
September	23.34	23.57	23.17	28	21	46	19	2.1	5.4	30	S.	SE.	90
October	23.34	23.59	23	18	9	44	16	2	6.1	30	NE.	SE.	89
November	23.22	23.48	22.79	15	13	54	35	2.1	6.6	41	SW.	SE.	82
December	23.36	23.52	22.98	10	10	69	50	3	7	36	NE.	NE.	74
Total for year	23.28	23.59	22.73	24	20	57	33	3.6	6.4	41	SW.	SE.	75

a Mountain time.

CLIMATIC CONDITIONS.

There is no portion of the Union possessing such splendid climatic conditions as exist in this Territory. Here we have a dry, arid temperature, with no extremes of heat or cold, with clear, bright skies and an almost continuous sunshine, that has given New Mexico the well-known sobriquet of "the Sunshine State."

The climate is peculiarly adapted to the cure of pulmonary diseases. A celebrated physician who has given much study to the subject, and who recently made a tour of Europe and America in the interest of this class of the afflicted, investigating the climatic conditions of the various countries with reference thereto, recently stated that the conditions existing in New Mexico were superior to those found elsewhere; that it was an ideal climate for the cure of pulmonary diseases. This is conceded by the best-informed medical experts.

It is probable that at this time there is no disease that afflicts so large a class of humanity with such fatal results as that of pulmonary consumption; none that causes so much suffering, pain, and sorrow. It is a scourge affecting every class, the rich and the poor, the high and the low—all fall beneath its blight and succumb to its dreadful ravages.

Medicinal science has never been able to master it, or to discover medical appliances or remedies that will cure it when once it has a firm hold upon its victim. The greatest minds of the profession have devoted their lives to its study, searching for remedies without avail. All agree that nature's remedy is the best and only cure. Breathing of a pure, invigorating, rarefied atmosphere in an equable climate, with clear, bright sunshine, where the heat of the sun is at its maximum and that of the air at its minimum, are the best conditions for its cure.

All of these conditions are found at their best in New Mexico. In

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every community may be encountered those who have taken advantage of these life-giving qualities. In a large majority of cases where the invalid has come in the early stages of the disease he has found relief and either been entirely cured or had many years added to his life.

OUR MATCHLESS CLIMATE—PEERLESS AMONG PLACES. NEW MEXICO'S CLIMATE MAKES OF MERE LIVING A LUXURY.

Such are the general features of the climate of New Mexico, diversified, of course, by the peculiarities of each particular place as to whether in the northern, central, or southern part of the Territory; whether in river valley, on low-lying table-land, on higher mesa, or on mountain side; whether in sandy sections, on clayey soils, or in the rude wilderness of rock and gravel; whether surrounded by primeval pine forests, dry stretches of barren prairies, cultivated fields of grains and grasses, luxuriant orchards and gardens and vineyards; whether with eastern, western, northern, or southern exposure—in fact, the modifications are so innumerable in themselves and in their combinations that no two places, even a few miles removed, can be said to have identically the same climate. And yet the same general features pertain to all: Mild winters, cool summers, nights never warm, ceaseless sunshine, dry air, little rain, great altitude, no malaria, and abundance of electricity, making the matchless climate of the world. It is not given to the earth to claim perfection, but New Mexico comes as near perfection in climate as the world can produce. The mere act of living here is in itself an indescribable luxury. The drinking in of its pure, dry, electrified air is like taking an elixir. The walking on its elevated soil, where 7,000 pounds of air pressure have been removed from the ordinary human body, is like treading a new world. To gaze into the vast serenity of its dazzling blue sky, unflecked by cloud, undimmed by storm, is a pleasure never to be forgotten and never growing stale by repetition. To look out over its landscapes, with their sharply contrasted high lights and deep shadows, as of a scene illuminated by electricity, makes other views grow tame upon the eye. In summer, to arise every morning invigorated from a refreshing sleep between blankets, and to retire again in the evening without the lassitude and abject weariness produced by having spent the day in a sweltering sweatbox; in winter, to know nothing of the piercing, prying, not to be excluded cold, gnawing its way to your very marrow and curdling as it were the actual blood in your veins—to escape these, and have a winter with but few days when an overcoat is needed by anyone attending to business, and with almost every day permitting invalids to enjoy the sunshine and fresh air by walking, driving, or sitting in the parks, and, on the other hand, to find in summer that fans are never required for comfort, and that as soon as the sun goes down from the mountain heights and the lofty valleys there come sweeping upon the lower lands, cool and invigorating breezes, laden with resinous aroma and surcharged with electricity, carrying health to diseased lungs and throats, strengthening the entire frame, building up the physical man, invigorating depleted brain tissue, restoring destroyed appetite, quieting excited nerves—in a word, turning back the hands of life on the dial of age—to experience these things is to fall in love with the land and to be unwilling ever again to live elsewhere.

TO THE HEALTH SEEKER—EXCEPT WHERE ALTITUDE IS HARMFUL NEW MEXICO INVITES THE AFFLICTED OF THE EARTH.

While every class of invalid, except those suffering from heart trouble, will find relief in the climate and medicinal waters of New Mexico; while miasma is unknown and malaria can not be produced for lack of decaying organisms; while the water is pure and wholesome and the air is tonic in cases of feebleness and debility; while stomach and bowel troubles are unknown among infants and children are remarkably free from the insidious ills that wait on childhood; while rheumatism and skin and blood diseases vanish before the application of New Mexico's thermal waters; while all these and many others may be beneficiaries of the Territory's matchless climate, it is to the consumptive that this "land of sunshine" is emphatically the land of hope and health. The abundant electricity produces an unusual quantity of ozone from the oxygen of the atmosphere, and the pure, dry air, the ozone, and the balsamic exhalations rolling down from the pine-clad mountains, form an ideal natural medicament for all diseased air passages and mucous membranes, and they, in connection with the altitude, requiring greater lung activity, and the ceaseless sunshine, vitalizing every func-

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tion of the human frame, will invariably cure consumption if it be taken in time, and if the health seeker avail himself of nature's remedies by a life of outdoor exercise.

There are more men in New Mexico who have recovered from consumption after having been given over by their doctors in the States than are to be found in all the rest of the country put together. They came here, they recovered, and they are now among the leading men of the Territory. Consumption among the natives is absolutely unknown, and the children of consumptive parents coming here from the East grow up without the taint.

NEW MEXICO THE WORLD'S GREATEST CLIMATIC RESORT FOR THE CURE OF CONSUMPTION, THROAT, AND LUNG DISEASES.

Consumption is the scourge of humanity, one death in every six being placed to its charge. When it is remembered what a mighty army of diseases death marshals against the race, and yet that a sixth of the slain is from this one disease, the fearfulness of its curse becomes appalling. It shows that for other diseases science has found remedies, but that against consumption all knowledge and efforts are helpless. Hereditary and contagious, and often originating apparently without either cause; sometimes skipping a generation or certain members of a family, but ever returning for a prey to their descendants; as the race increases and as the appliances of civilization are augmented, cutting wider swaths in the field of human life, and yet laughing to scorn all medical skill and proving obdurate alike to the discovery of the scientists and the nostrum of the charlatan—such is consumption, the invincible lieutenant of death.

STUDY OF STATISTICS.

For some time the gathering of statistics had shown that consumption is much more prevalent in certain sections of country than in others. For instance, the proportion has been stated as Maine 50, remainder of New England States 25, Minnesota 14, Southern States 6, New Mexico 3, the last being less than anywhere else in the United States. But the further study of statistics brought to light the fact that, taking the world over, the greater or less prevalence of consumption accompanied certain marked differences in climate; and soon the climates of greatest and least prevalence became accurately defined. From this it was but a single step to the conclusion that those climates in which consumption least prevailed, or, in other words, which most largely prevented the disease, would be the climates most conducive to recovery from it. This conclusion was the more readily reached because medical science, despairing of materia medica, had been for some time empirically experimenting in the matter of climatic cure.

CLIMATE THE ONLY CURE.

The study of statistics brought to light the fact that those sections were the least affected with consumption which combined the most thoroughly in their climates aridity, altitude, sunshine, scanty vegetation, and absence of extremes in either heat or cold. This much being established, in 1885 the medical congress of France appointed a committee to make a thorough examination in any part of the world that gave promise of the requisite climatic conditions in any considerable degree. It was agreed that the greatest equability was to be found in the valleys of a mountainous country, where of necessity there would be comparative immunity from the winds and storms which sweep over the plains and coast regions. The committee agreed that the proper temperature would be found between the thirty-second and thirty-sixth degrees of latitude, where the patient would not be exposed to the severe weather of the north or the enervating influences of the south. The altitude necessary to give the best degree of atmospheric pressure was held to be about 5,000 feet above sea level, as less altitude gives too much pressure and hastens the destruction of lung tissue, while a higher altitude subjects the patient to the danger of other complaints.

This committee visited Asia, Africa, and North and South America, and agreed that the Rio Grande Valley of central New Mexico was the locality wherein the

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necessary conditions were found in the highest degree. But one locality—a small territory in the northern part of Africa—compared favorably with it. The American Health Resort Association, in the year 1891, formally decided upon central New Mexico as the most suitable place in the world, and indorsed the report of the French physicians who had investigated the subject.

So much for theory. Now for experience, for when experience—the same, practically, as experiment—confirms theory or hypothesis, demonstration is regarded as established. Doubtless there is still a great deal to learn, but this much may be accepted as definitely determined:

First. That the bacilli of consumption will not develop at a greater altitude than 4,500 feet in combination with a dry atmosphere and abundance of sunshine. The development of the bacilli begun elsewhere will be arrested, and the progress of the disease be checked in all cases where not more than 10 per cent of the lung surface has been affected. Relief has been experienced and practical cures have been wrought where much greater proportions of the lungs have been attacked, but 10 per cent is believed to be the line of comparative safety.

Experience has also demonstrated that dampness of atmosphere furnishes a stimulus to the development of consumption, producing bacilli equaled by no other agency and approached in efficiency only by confinement within doors, cut off from exercise and direct sunshine, and accompanied by the customary inhalation of the superheated and vitiated atmosphere of a sick room. No wonder it is, where the dampness prevails for six months of the year and the other condition is necessitated during the remaining six to protect the invalid from the rigorous cold his weakened vitality is unable to resist, that in such localities consumption runs riot, and to be affected is to die. Yet such conditions prevail over large portions of the habitable globe.

Experience has further demonstrated that, while the most favorable points near the coast are loaded with moisture, this Territory furnishes a dry, germless, healing atmosphere, noted for rarity, aridity, purity, and abundance of ozone and electricity, with the added excellence of practically perpetual sunshine, and seasons destitute of excessive heat or rigorous cold. Thus is met the entire demand for dryness, evenness of temperature, elevation, sunshine, and tonic atmospheric effects—the five prime attributes in the conflict with consumption, nowhere else found combined in such fullness and perfection as in the climate of New Mexico. As incidentally illustrating this claim, it may be said that fresh meat is so perfectly cured by hanging in the open air it may be preserved for use indefinitely. Water will remain for months in basins formed by rocks in the mountains without stagnating or becoming impure. A dead animal may lie for months slowly drying and crumbling away, but giving forth no offensive odor.

But investigation has further brought to light the fact that while for ages prior to the conquest of Mexico consumption prevailed exclusively among the Spaniards, and is equally prevalent to-day, yet for centuries the New Mexico Spanish-Americans have been absolutely free from the disease, and the very name of it has long since passed from their vocabulary. Although many consumptives have made their home in this Territory, none of the natives have been known to contract the disease. Also the native born, whether Spanish or of other extraction, possess an absolute immunity, and this seems to apply even to those whose parents are consumptive.

The bearing of this fact is altogether important. If the death rate from consumption in New England is eight and one-third times that of New Mexico, and if the native born, regardless of national descent,

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have furnished not a unit to the ratio, then must the deaths have been of those seeking this climate for recovery, and they should be credited to the sections whence they came, leaving New Mexico represented by zero in the list. Of course not all who come can be expected to recover. In many instances the patient can not be induced to make the change during the early stages, but, with the fallacious hopefulness characteristic of the disease, resists warning and advice until destruction of the lung tissue is so extensive as to be beyond repair even under the best climatic conditions and treatment. The necessity of being out of doors and active in order to reap the benefits which the climate offers is the testimony of all.

But another fact in this connection has been established, and it is worthy of all consideration. It was presented by Dr. William D. Barton, passed assistant surgeon, United States Marine-Hospital Service, in the North Carolina Medical Journal, January, 1896. After having laid down the proposition that the proper climate for curable or arrestable consumption is now almost as clearly defined as the value of vaccination and the relation of microorganisms to disease, and after clearly stating that in his belief the central portion of New Mexico is the preeminently favored region of the arid West, the most nearly ideal section for climatic treatment of lung troubles accessible to the people of the United States, he says:

Practically, tubercle germs do not infect here. Children of consumptives grow up heartily. The germs fall on barren ground and do not multiply. Without reckless disregard of all hygienic and preventive measures, this state of things will continue for many years or forever. These arid regions are nature's sanitarium for tuberculosis.

The following extract is from a very interesting paper by Dr. J. L. C. Whitcomb, of Liberty, N. Y. This paper was published in the New York Medical Record of September 25, 1898: "The one point I wish to emphasize with all the force I am capable of—the point, the importance of which overshadows and minimizes every other consideration in the treatment of this subject—is that suitable climatic environments are the absolute requisite of any successful treatment of phthisis, so far as medical knowledge can affirm at the present time. Of no other disease can this be said. In a nutshell, our one rational treatment is: First, early diagnosis; second, a suitable climate. Give the patient the benefit of these, and we give him nine chances to get well to one against it. * * * What is needed is oxygen—the oxygen of pure, dry air. This alone is a specific in early phthisis. It will not cure every case—no specific does that—but it will cure nine in every ten, providing enough of the remedy is taken."

One of the most important medical gatherings of recent times was held at Moscow, Russia. The occasion was the meeting of the International Medical Congress. It brought together more than 7,000 medical men, among whom were the recognized leaders of every civilized country. One meeting was devoted to the discussion of the present methods of treating tuberculosis. The quotations given below are from papers read by some of these great men.

By Dr. Von Ziemssen, of Vienna: "As far back as we can see in the history of medicine, fresh air has been one of the requirements in the treatment of tuberculosis, but it is only of late that the advantage of high altitudes has been clearly demonstrated. That tubercular patients can get a quantity of fresh air in these regions is evident to anyone who has visited the places; * * * but the fresh air that surrounds them is not all—the altitude brings about an excitation of the blood-making organs that increases the corpuscular elements in the blood. Even in health this reaction takes place, but not so markedly as in the diseased states."

By Dr. Senator, of Berlin: "I am convinced that the only treatment of value is the climatic, and I believe high altitudes are of value. I regard altitude as a factor second only in importance to fresh air. Sunlight is also of great value, and the sun's rays themselves exert a particular influence."

By Dr. Von Leyden, of Berlin, Germany, greatest general practitioner: "We must not look to the future; we are living in the present and must treat in the present. So far the only treatment that has given any success is the climatic. My best results have been obtainad in mountains. The more comfortable a patient be made there the better, as a rule, will be the results."

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By Dr. Kornig, court physician of St. Petersburg: "I have found an increase in the red blood cells in patients who have gone to high altitudes, and I am inclined to attribute to this increase a large part of the benefit derived from mountain sanatoria."

By Dr. Jarvein, professor in the Military Academy of St. Petersburg: "After listening to the greatest authorities in Europe on the treatment of phthisis in mountain sanatoria I believe there can be but little doubt in the minds of those present that this is at present the only mode of treatment."

By Dr. Vivant, of Monte Carlo, Riviera, France: "The climate must be justly regarded as of value in the treatment of this disease (tuberculosis), and offers a certain number of features in common, viz: Pure air—that is, oxygen—in an unlimited quantity; and dryness—that is, absence of fogs, of air charged with moisture, to interrupt light, heat, and chemical action of the sun's rays."

ESPECIALLY NEW MEXICO.

Dr. George Halley, professor of surgery, Kansas City Medical College, says: "New Mexico possesses the seven great requisites of a sanatorium for the treatment of consumptive patients and those suffering from bronchial and certain forms of throat affections. First, a very dry aseptic air, experiment showing that the atmosphere is as free from harmful bacteria as that of midocean—the purest known to science. Second, a light atmospheric pressure caused by the high altitude of the country, and ample table-lands where the air has free movement and the rays of the sun uninterrupted play. Third, a maximum of sunshine and minimum of cloud. Fourth, a slight variation of temperature only between the extremes of heat and cold. Fifth, a minimum likelihood of sudden changes of temperature. Sixth, a light, porus, dry soil. Seventh (and very important), a low dew-point. I have sent many patients there, and the result has always been beneficial.

"It seems, at first sight, a long distance for patients to travel from France to New Mexico; but there is, I believe, no climate in southern Europe or northern Africa—the localities hitherto utilized for this purpose by Europeans—that can compare for a moment with that of New Mexico and parts of Colorado, for the treatment of consumption."

Speaking of the immunity of New Mexico from consumption, ex-Surgeon-General W. A. Hammond, United States Army, says: "New Mexico is by far the most favorable residence in the United States for those predisposed or affected with phthisis (consumption). In a service of three years in New Mexico, during which period I served at eight different stations, I saw but three cases of phthisis, and these were in persons recently arrived from elsewhere."

Dr. O. D. Walker, professor of physiology and diseases of the nervous system in the Keokuk Medical College, Keokuk, Iowa, and formerly physician in charge at the Government Indian school, Lawrence, Kans., makes the following interesting and valuable report of his observations in New Nexico: "I have carefully observed the salutary effects of this climate upon patients. A young lady, age about 18, came to me July 1, 1896, suffering from incipient phthisis. She was having night sweats, losing flesh, looked pale, and suffered from a very distressing cough. The microscope showed an abundance of tubercle bacilli. I used creosote and injections of Paquin's serum without marked benefit, and finally advised her to go to Las Cruces, N. Mex., which she did. Her cough rapidly improved, and the night sweats stopped; she gained 20 pounds in flesh in a few months and grew strong and hearty. I saw her in Keokuk July 5 last. She seemed to be perfectly well. Had she remained in the Mississippi Valley I think she would have succumbed to this then rapidly progressing disease within six months under any line of treatment."

"The highest interior of our continent comprised in the great table-land extending from the Great Divide in Colorado, through New Mexico, is not excelled anywhere in the world as a resort for consumptives. The altitude, the dryness, the purity of the atmosphere, and the large amount of ozone it contains, combine to create conditions very favorable to recovery from phthisis."—[Dr. Gatchell, in the Medical Era.

"The air here (New Mexico) is very dry, but its rarity is tonic and stimulating. The various altitudes and latitudes give a great variety of climates as to temperature and atmospheric tenuity, but all are alike in dryness."—[F. H. Atkins, M. D., S. B., in the Climatologist.

The Los Angeles Bullion says: "The climate of New Mexico leaves nothing to desire, and it constitutes an element of growth and prosperity in the future that too important to remain neglected."

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"New Mexico is fast becoming a favorite resort for consumptives, and as physicians learn more of its advantages it will grow still more rapidly in favor. Its uniform temperature, almost constant sunshine, and its dry, rare atmosphere are elements that commend this climate to our consideration."—[F. E. Waxam, M. D., professor of laryngology and rhinology, College of Physicians and Surgeons, Chicago.

"I think New Mexico surpasses any locality for consumptives I have yet visited, and I have been all over California, Colorado, the South, the Sandwich Islands, and Europe. * * * I am decidedly of the opinion that the region visited is, for consumptives, superior to any other part of the United States or the world, of which I have any practical knowledge."—[J. F. Danter, M. D., in Medical Visitor.

The Kansas City Medical Record, a high authority on such matters, in an editorial upon the subject of "Health resorts," speaks as follows: "It has been a great satisfaction to us to find our opinion regarding the sanitary characteristics of New Mexico indorsed in a most significant manner by some very high authorities on the subject. Some time ago a party of medico-scientists, commissioned by the Société Médicale of France arrived in New Mexico, after inspecting many parts of the world held in high esteem as winter and summer resorts for consumptives. Their object in thus journeying was to examine and report upon the sanitary qualifications of these different localities and countries, the end in view being the location of a large sanatorium for the treatment of consumption. The commission (with, we believe, the exception of one member, personally interested in another locality) reported upon New Mexico as in every respect better suited for such a purpose than any country they had visited, including far-famed Algeria and other places heretofore noted as health resorts, especially emphasizing the fact that a case of consumption was never known to have originated in New Mexico."

But the strongest proof, however, that the central part of New Mexico is superior to all other sections of the United States for the climatic treatment of consumption has just been given by no less an authority than the United States Government itself. The abandoned military reservation of Fort Stanton, in this Territory, has become by Presidential order the property of the Marine Hospital Corps, and the work of fitting the place up as a sanatorium for consumptives in the marine service is now in active progress. As soon as the buildings can be made ready for their reception all the consumptive patients in all the marine hospitals of the country will be taken there.

Surgeon-General Wyman says the establishment of such a sanatorium is a matter that he has had in mind for many years, his object being to place the patients where they will be under the best natural conditions and at the same time be isolated from the rest of the world, thus securing the maximum of advantage to the afflicted and the minimum of danger to the puplic.

The late Dr. Bratton, of the Marine Hospital Corps (already quoted from in this article), was stricken with consumption, and was restored to perfect health by a sojourn of two years at Albuquerque.

Dr. Bratton was instructed by the Surgeon-General of the United States to prepare a report upon the benefit of the New Mexico climate to consumptives, and also to make an examination of all the Government property in the Territory which there was any chance of the Marine Corps securing for a sanatorium for consumptives, giving his opinion about the different sites. He made an exhaustive report upon the subject, and agitation began for the donation of some Government reservation in New Mexico to the Marine Hospital Corps to be used as a sanatorium for consumptives.

This agitation resulted in the corps securing the abandoned reservation at Fort Stanton, with all its buildings and improvements, and the Surgeon-General considers it an ideal place for the purpose. Dr. Cobb, of the Marine Corps, is already on the ground with a strong force of laborers, and the work of putting the place in readiness for the

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reception of patients is progressing rapidly. There are thirty-eight good buildings on the reservation, and it is thought they will afford ample room to accommodate all the consumptive patients from the various hospitals now being used along the coast, and as soon as these buildings can be made ready for the reception of all patients of this class they will be taken there at once. It is hoped by physicians, and by the friends of humanity generally, that this experiment will do much toward pointing out the way to the ultimate control of this terrible malady.

It may be added to the foregoing that Fort Stanton is a beautiful place, the main buildings inclosing an open square several hundred feet in diameter. The ample grounds surrounding, which will be beautifully kept, will add much to the comfort and pleasure of the patients and invalids, and will enable them to spend the greater portion of their time in the open air and sunshine, which plays so great a part in the recovery from this terrible disease.

But the asthmatic or the consumptive is not the only invalid who may turn his eyes with hope to this mecca of the afflicted.

To the overwrought mentally or physically, to the run down from dissipation or disease, to the prostrated, whether from devotion to business or pleasure; to those who have lost appetite, lost the pleasures of sleep, lost interest in life, whatever the cause or reason—to all these New Mexico extends her hands of healing. Her bright skies and radiant sunshine; her pure, dry, rarified air, surcharged with electricity and saturated with ozone, tonic, and invigorant; her incomparable nights, cool, refreshing, delightful, making sleep the greatest of all luxuries, and absolutely incompatible with insomnia—these are the things that come of merely being in the climate and bring their blessings of quieted nerves, restored strength, increased flesh, regained appetite, and recovered sleep, just simply whether we will or not. Such are the climatic conditions of New Mexico, to which hundreds of people who have been benefited will gladly testify.

FOREST RESERVES.

OFFICE OF THE FOREST SUPERINTENDENT,
Santa Fe, N. Mex., July 20, 1899.

DEAR SIR: In compliance with your request of the 14th ultimo, I submit report of forest reserves located in the Territory of New Mexico, namely, the Pecos River and the Gila River forest reserves.

The Pecos River Reserve is located in the northeastern part of the Territory of New Mexico, containing 22 townships, with an area of over 431,040 acres, created a forest reserve by proclamation of Grover Cleveland, on January 11, 1892, and increased to its present size by President McKinley, May 27, 1898.

The objects of forest reservations established by the Federal Government are to protect and improve the forests for the purpose of securing a permanent supply of timber for the people and insuring conditions favorable to continuous water flow or supply. It is the intention to exclude from these reservations, as far as possible, lands that are more valuable for the mineral therein, or for agriculture, than for forest purposes; and where such lands are embraced within the boundaries of a reservation they may be restored to settlement, location, and entry.

The protection afforded the young growth of timber by the creation of a forest reserve can not be overestimated, and is of permanent and lasting benefit to the States and Territories in which they are located: First, for the munificent protection afforded continuous water supply and flow by retaining the snow in the mountains until a late period of the season, furnishing an abundant supply of water to springs, wells, and other sources of supply; second, the snow acts as a cover for the young growing shrubs and small growth of timber in preserving it until the warm rains of spring diminish the cover of snow; third, the protection in winter against the chilly blasts of frigid winds that sweep across the prairies, and it is a great protection and shelter to live stock and interests of mankind in general.

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The Pecos River, from which the reserve takes its name, is the principal stream flowing through the reserve. Other streams abound, but none of the value and importance of the one described. An abundance of mountain trout are found in this beautiful stream, and during the summer season many tourists and residents of Santa Fe line its banks for a brief camping vacation, rest, and recreation.

The mountain ranges in this reserve are two—the Santa Fe and the Las Vegas—ranging in height from 8,000 to 13,306 feet above the sea level.

There have been many evidences of mining interests of great value in different parts of this reserve, but no effort has been made to prospect for same. Game abounds in much variety, such as wild turkey, grouse, squirrels, rabbits, deer, cinnamon bear, and mountain lion.

There are at present six forest rangers stationed upon ten districts within this reserve, guarding the interests of the forest with ability, integrity, and honesty. Each forest ranger is under the authority and orders of the forest supervisor, residing at Willis, N. Mex., overseeing all matters, conditions, and circumstances connected with his reserve. His superior officer is the forest superintendent, who is directly responsible for the management and conduct of all matters and of all reserves of Arizona and New Mexico, and whose headquarters are at Santa Fe.

The Gila River Reserve was created by proclamation, March 2, 1899, by President McKinley. This reserve contains 101 townships, and over 3,270,000 acres, located in the southwestern part of the Territory of New Mexico.

The boundaries of the tract are described as follows:

Beginning at a point on the boundary line between New Mexico and Arizona where it is intersected by the north line of township 5 south, range 21 west, New Mexico principal meridian, New Mexico; thence easterly along the township line to the northeast corner of township 5 south, range 16 west; thence southerly along the range line between ranges 15 and 16 west, to the southeast corner of township 8 south, range 16 west; thence easterly along the township line to the northeast corner of township 9 south, range 15 west; thence southerly along the range line to the southeast corner of said township; thence easterly along the township line to the northeast corner of township 10 south, range 10 west; thence southerly along the first guide meridian west, between ranges 9 and 10 west, to its intersection with the third standard parallel south, between townships 15 and 16 south; thence westerly along the said third standard parallel south to the southwest corner of township 15 south, range 16 west; thence northerly along the range line to the northwest corner of said township; thence westerly along the township line to the northeast corner of township 15 south, range 19 west; thence southerly along the range line to its intersection with the third standard parallel south; thence westerly along the third standard parallel south to its intersection with the boundary line between New Mexico and Arizona; thence northerly along said boundary line to the point where it intersects the north line of township 5 south, range 21 west, the place of beginning.

Excepting from the force and effect of this proclamation all lands which may have been, prior to the date hereof, embraced in any legal entry or covered by any lawful filing duly of record in the proper United States land office, or upon which any valid settlement has been made pursuant to law, and the statutory period within which to make entry or filing of record has not expired: *Provided*, That this exception shall not continue to apply to any particular tract of land unless the entryman, settler, or claimant continues to comply with the law under which the entry, filing, or settlement was made.

This reserve is of great magnitude, and its principal diverse interests are mining and stock raising of all kinds.

There is an abundance of game roaming over this vast area, and a number of streams furnish an abundance of water supply. The principal ranges of mountains are the Mogollon, San Francisco, Tularosa, Black, Little Range, and Diablo; the principal river is the Gila, the river from which the reserve takes its name.

The mining interests located within the reserve are very valuable, and are developed and worked to a large extent; and the live-stock industry is thriving and prosperous, contributing much to the wealth and prosperity of the Territory.

People who are thoroughly acquainted with the object of the creation or formation of forest reserves and their maintenance by our Government for their benefit can not overlook the great importance and numerous benefits accruing, and will always be the promotion of a great and lasting supply of timber and continuous water supply or flow, affording a protection to the young and growing forests, whose value is not to be estimated, considering the many uses of future value.

There are at present one supervisor stationed at Silver City, adjacent to the Gila River Reserve line, and one forest ranger patrolling a district within the reserve.

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Within a few weeks a force of four more rangers, constituting a total of five, will be assigned to the forest districts throughout the reserve, under the supervision of the supervisor, patrolling, burning fire breaks, piling brush and logs preparatory to burning when a seasonable opportunity offers itself, and also guarding zealously the interests of the forest against timber-cutting depredations, and engaging in miscellaneous duties connected with the reserve.

At present all forest rangers of Arizona and New Mexico engaged on the forest reserves are supplied with a badge with the following inscription thereon: "Forest reserve. Ranger. Department of the Interior. U. S.," an insignia of authority as an officer of the forestry reserve force.

Recently the forest force of all the reserves in Arizona and New Mexico has been equipped—each forest ranger—with the following utensils for the performance of duties connected with forest fires and the construction of trails and roads leading throughout the reserves: Ax, shovel, pick, rake, brush hook, steel file, and fire bucket. These are very essential, and aid the progress of the construction of trails and roads.

Much progress has been made in the official supervision, and duties and matters connected therewith, since their first organization and experimental stage of last August, and much more is in contemplation for the future to place the forest reserves upon a lasting and enduring basis.

I have the honor to have complied with your request. Thanking you for the opportunity of relating a brief history of forest reserves and hoping for their ultimate success, and of our great and grand growing Territory, which wishes to enter statehood, with best wishes, I am,

Sincerely yours,

W. H. BUNTAIN,
Forest Superintendent.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

EDUCATIONAL.

REPORT OF THE SUPERINTENDENT OF PUBLIC INSTRUCTION OF THE TERRITORY OF NEW MEXICO.

DEAR SIR: In compliance with your request, I have the honor to submit herewith a report of the condition of the public schools of this Territory at this date.

The first settlement of New Mexico was made in the sixteenth century by the Spaniards. From that period to the war wherein the independence of the people of New Mexico was proclaimed, being a little over two hundred and fifty years, the Spanish Government did absolutely nothing toward the education of the people of what was, under the Spanish régime, the viceroyalty of New Mexico.

From the year 1821 to the year 1846 New Mexico was a part of the Republic of Mexico. During these twenty-six years the condition of the people in this section was very little better than it was under the Government of Spain. They were far removed from the influences of civilization and were greatly oppressed in many directions. The Government of the Republic of the United States of Mexico did absolutely nothing for the education of her people. Thus illiteracy prevailed, and no effort was made to grant educational facilities to the masses of the people.

In 1846 New Mexico became an integral part of the United States of America, but for many years, owing to the peculiar circumstances prevailing, the great distance from the States, Indian wars, the civil war, and the remoteness from civilization, there was no general interest in education, and no public schools existed. Under the Mexican Government some private schools existed. The Catholic Church did good educational work and endeavored to reach as many children as possible, but the resources of the church were not sufficient to reach the masses. Many of the wealthier citizens sent their children to the States to be educated, but the masses of the people were forced by the circumstances under which they lived to pass through life without any knowledge of the simplest rudiments of learning. This state of affairs continued for many years after New Mexico became a Territory of the United States. The Federal Government neglected the educational interest of the Territory from the time of the acquisition of New Mexico until last year, when an act was passed granting aid in the shape of a donation of public lands to the public schools and the higher educational institutions.

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UNIVERSITY OF NEW MEXICO, ALBUQUERQUE.

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The people of the Territory, however, through their legislative assembly, made a commencement toward a system of public schools in the year 1872, but an efficient public-school law was not passed until the year 1891. Since then the public-school laws have been greatly improved, and to-day the laws relating to public schools are liberal and comprehensive. It is found that our people are wide awake to the benefits of education and are anxious to give it to their children. The school attendance is increasing year by year and the management of the public schools is satisfactory and efficient in a vast majority of the districts.

In the year 1872 the Territorial legislative assembly for the first time enacted a law establishing public schools, and provided by taxation for their support, and from that beginning each successive legislature has labored earnestly and faithfully to build up a public-school system, increase its efficiency, and give each child in the Territory an opportunity to secure a good common-school education. Of course the first laws were crude, but improvement came with experience. Under the first law each county had five county school supervisors, but they could not by any means look after the interests of the schools in their respective counties as they should have been looked after, as the counties were very large, some, indeed, larger than some of the New England States. At that time also taxable property was limited, and the work of perfecting the school system was slow and laborious. The population was then very much scattered, and is still to-day in that condition, although not to such a great extent as during the seventies and eighties. Nevertheless under these trying circumstances schools were established in nearly every precinct in the Territory, except where hostile Indians prevented.

In 1884 the legislative assembly revised the school laws to a great extent, really enacting new laws, and establishing the office of county superintendent of the public schools, and enumerating the branches to be taught, as follows: Orthography, reading, writing, arithmetic, geography, grammar, and history of the United States. By this new law the school districts and the district school directors were created, and school districts were made corporations and given corporate rights. The law provided for a tax levy on all taxable property in the Territory not to exceed 3 mills on the dollar of the assessed valuation. This new law really opened the way for the foundation of a comprehensive public-school system, and the census of 1890 showed a decided falling off of the number of illiterates.

The legislative assembly of 1891 again amended and enlarged the scope of the Territorial school laws. A Territorial board of education was established, consisting of the governor of the Territory, the superintendent of public instruction (this office was created by this act), the president of St. Michael's College, and the president of the Agricultural College at Las Cruces. The duties and powers of this board are such that it has an opportunity to greatly advance the work of education, to keep in touch with the educational work of the several counties, and to exercise a general supervision over the acts and doings of county superintendents and district school directors.

The superintendent of public instruction is an official appointed by the governor and confirmed by the legislative council, and, under the law, must visit the several counties of the Territory each year, inspect the public schools, keep in touch with the county superintendents of education and with the principals of the city schools, making reports to the governor of all things connected with each public school system, suggest reforms and alterations in the law, and generally supervise educational work in the Territory. Under this law the Territorial board of education has a very important duty to perform, which is the selection, every four years, of a uniform system of books to be used in the public schools. This one proviso alone was, and is, the cause of great improvement in our schools. Prior to 1891 the different counties and incorporated towns used different school books. Since the enactment of the present law uniformity has been obtained, and the books used are of a superior standard.

Much good has resulted from the work of the board of education and the office of superintendent of public instruction. Many reforms have been instituted, and many more are contemplated. The law of 1891 provide "That school boards must provide schoolhouses, teachers, fuel, and necessary supplies for the schools," and provides for a tax levy on the taxable property of each district not to exceed 5 mills on the dollar on the assessed valuation of all the property in the district. It also directs that the Territorial auditor shall levy a tax not to exceed 3 mills on the dollar on all of the assessed valuation of the property in the Territory. This is collected by the county treasurer and apportioned by the county superintendents to the different school districts of the county on the first Monday of January, April, and June, and such apportionment is based upon the number of children of school

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age residing in each district. The funds so derived are expended for teachers' salaries, printing, and the salaries of county school superintendents. In addition to this, the school funds of the several counties receive part of the fund from licenses issued, also all the fines assessed for violation of the law, and the licenses collected for the privilege of selling liquor. There is also a poll tax of $1 levied on each able-bodied male person for school purposes. It will thus be seen that the people of the Territory are taxing themselves very heavily for the support and maintenance of the public schools and the education of their children.

The law provides for the holding of a county institute for teachers for at least two weeks in every school year in every county, and makes it compulsory upon the teachers to attend the same. At such institute instruction is given to teachers in the branches to be taught in the schools and in the best methods of teaching. The attendance of children between the ages of 8 and 16 years is made compulsory by law.

As to the money collected for school purposes since the first school law went into effect, it is only practicable to give a correct statement since 1891, as the records of the Territorial auditor's office prior to that time were partially destroyed and greatly mutilated through a fire which destroyed the Territorial capitol building, wherein this office was situate, early in the spring of 1892.

It is found from the records that in 1891 the amount of money raised for schools from Territorial taxation was $85,192.17. The average daily attendance for the Territory was 12,397 pupils. The number of teachers employed was 407. The average daily attendance at each school was 34 pupils.

In 1895 there was raised for the public schools $154,107.38. The number of teachers employed was 538; average daily attendance for the Territory was 15,081 pupils; average length of school term, four months; average daily attendance at each school was 28 pupils.

In 1898 the amount of money raised for school purposes was $182,172.18; number of teachers employed was 541; average daily attendance for each school was 30 pupils; average daily attendance for the Territory was 16,558 pupils; average number of months taught, five. It will thus be seen that the average daily attendance of pupils has increased 4,161 in number in the past seven years. This is a progress of no mean degree when it is taken into consideration that in many of the precincts and school districts settlements are very scattered, ranches are far apart, and the children have to travel many miles to reach schoolhouses. Surely this is progress of no mean degree.

In addition to the public schools of the Territory there are at present in active and successful operation the following Territorial institutions: The Agricultural College, at Las Cruces, with two substations, one at Las Vegas and one at Aztec; the University of New Mexico, at Albuquerque; the School of Mines, at Socorro; the Normal University, at Las Vegas; the Normal School, at Silver City, and the Military Institute, at Roswell, and the School for the Deaf, Dumb, and Blind, at Santa Fe. These institutions during the last past school year have had 405 scholars attending them.

The value of the property embraced in the above institutions is $191.025.45. This in a Territory that had no public-school system before the year 1872.

As to sectarian schools, the Catholic church has eighteen of them in operation, attended by 1,602 pupils, employs 72 teachers, and has school property to the value of $231,700.

The Methodist Church supports eleven schools, attended by 462 pupils, and has school property valued at $10,000.

The New West Educational Commission supports five schools, attended by 219 pupils, employs 7 teachers, and has school property to the value of $44,000.

The Presbyterian Church supports twenty-five schools, attended by 1,105 pupils, employs 25 teachers, and has school property to the value of $37,900. The average number of months taught by the sectarian schools is nine months in the year. These results have all been attained by the people of New Mexico through their own efforts and without any Government aid. This showing, while not as creditable as we would wish, is at the same time one of which our people can well be proud. Children to the number of 3,152 attend the sectarian schools. This fact always counts against the Territory when statistics are compiled, because these are based upon the number of children of school age and attending the public schools.

The total average daily attendance for the Territory is 20,273 pupils, counting the attendance at the sectarian schools as well as the attendance at the public schools and at the higher educational institutions. The number of pupils enrolled in the public schools of the Territory during the last school year was 23,061, which, added to the number attending sectarian schools, brings the number of children attending school in the Territory up to 26,776.

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It can readily be seen that this attendance must greatly reduce the per cent of illiteracy within a few years, and I look forward to the coming census to demonstrate the fact that this has been reduced. From the best information at hand at the present time I judge the illiteracy has been reduced to 15 per cent.

New Mexico is fast moving forward in the line of education, and those who think we are sleeping in this matter will find themselves mistaken and, I hope, agreeably disappointed.

Many of the public-school buildings in the Territory would be an ornament to some of the rich and populous States of the Union. The buildings and institutions maintained by the Territory are handsome and commodious and furnished with all modern improvements. In all the Territorial institutions libraries have been established and are being added to yearly as opportunity offers and funds allow.

During the coming school year I expect a still more rapid improvement, as railroad facilities in the Territory are increasing and it is becoming easier and cheaper to travel. People from the country are becoming more accustomed to sending their children to the city schools, which, of course, will increase the average attendance.

In this report I have not counted the Government Indian schools maintained at Santa Fe and Albuquerque and at the Navajo and Mescalero Indian reservations and at the several pueblos of Jicarillas, Apache, and Pueblo Indian agencies. I have only considered the free public schools and the institutions maintained by taxation by the Territory.

Neither have I made notice herein of private schools established in the larger towns of the Territory, for the reason that I have received no reports from such. I estimate the attendance of these private schools at from 250 to 300 pupils, but I have not added these figures to the number given heretofore in this report, as I desire to be guided simply by official facts and figures.

Upon the whole, I believe that the people of New Mexico have no occasion to be ashamed of the progress made within the past eight years in their public-school system.

Very respectfully,

MANUEL C. DE BACA,
Superintendent of Public Instruction.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

IMPORTANCE OF EDUCATION.

Investigation, agitation, discussion, and progress are characteristic of the age in which we live. Popular education, which lies at the foundation of popular government, is attracting greater attention each year on the part of all persons who look to the common people as the real source of power. To all such persons the free common schools stand out prominently as the mightiest factor in the training of that intelligent citizenship which is absolutely necessary to the welfare and perpetuity of a free government. It is a difficult matter for anyone to realize the size and importance of the vast army employed in the public schools of the United States, or to have conception of the greatness and grandeur of the common schools.

DISTRICT SCHOOLS.

A limited investigation will make it plain to anyone that lack of organization and system is to-day the greatest source of weakness in the district schools. While all incorporated towns and cities in the country have recognized the necessity of systematic work, and have effected proper organizations with carefully prepared courses of study, made effective by proper and efficient supervision, the rural school, in which are found a great majority of the entire enrollment of the Territory, are in many instances almost without organization, system, or supervision. All this is due, in a great measure, to the imperfection of the present school law. It is, however, an undeniable fact that

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under the present law wonderful results have been accomplished since its enactment, but it has failed to keep pace with the progress of the times. What was good enough ten years ago is not good enough now. The time has come when the legislature should take the law in hand and amend it in a great many particulars, especially in the matter of granting more power and authority to the various county superintendents. Under the existing laws they have no power or authority to prevent or correct evils of any nature. They should be clothed with full authority to investigate and approve all contracts of whatever nature, for whatever purpose, before any school funds are used; to suspend any teacher or school director for cause, and to have full control over the supervision of all the common schools in their counties, and to be subjected to a penalty for a failure to comply with their duties. At present a county superintendent is a mere figurehead, with no power or authority unless it be to sign warrants for the payment of the teachers' wages.

In spite of all the disadvantages under which we have had to work, it is a matter of sincere congratulation to all the friends of public education to know that great progress has been made during the last few years in educational matters throughout the Territory. This is especially true as to our city schools, where funds have been ample to secure the services of competent superintendents and teachers.

Our city schools will compare favorably with those of any city in the Union. The teachers are graduates of some of the best institutions of learning in the United States, and fortunate indeed have been our city boards of education in securing the services of such competent instructors.

TERRITORIAL INSTITUTIONS.

I beg to call particular attention to the reports of our Territorial institutions of learning. They will be found as a part of this report. The Territory boasts to-day of a university, a school of mines, a college of agriculture and mechanical arts, two normal schools, a military institute, and a school for the deaf and dumb and blind.

These institutions are thoroughly equipped in all particulars and have met with most satisfactory progress. The attendance is increasing from year to year, and their fame is spreading all over the country, as is proven by the students who are coming to attend from without the limits of the Territory.

TERRITORIAL CERTIFICATES.

Our present school law contains no provision for the granting of Territorial certificates. The laws of all the States in the Union contain such provisions, and it is earnestly to be desired that our next legislature will grant authority to the Territorial board of education to grant Territorial certificates to such teachers as may be entitled to them on account of their long and successful career. There are many well-known educators in our Territory whose services in the cause of education have been so valuable that they are entitled to the honor of having in their possession life certificates entitling them to teach in any section of the Territory.

ATTENDANCE.

The statistics of school attendance are watched with much interest, because they indicate the appreciation in which the schools are held by the people.

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I am pleased to report that there is a marked increase in the enrollments and attendance in nearly all of the schools of the Territory.

EXAMINATION OF TEACHERS.

In looking over the great field of public education in the United States we perceive that while in general the work has been with the same common aim, which is the diffusion of secular knowledge and civic virtues among the people, at a particular epoch in the history of education in the several States efforts of educators assume varied directions.

In the formative epoch their energies are employed in securing legislation looking toward the creation and preservation of their system.

When this has been attained and the schools have been placed on a solid foundation, the main object is to convince the people of their necessity and to prevail upon parents to send their children to them regularly for a certain period during the year. In New Mexico we are yet in the formative state in our educational development, because the want of sufficient revenue has somewhat retarded our progress. In the formative period emphasis is especially placed upon securing a sufficient revenue to maintain and improve the system. The most important duty is to select and support a corps of properly qualified and efficient teachers. It is my opinion that the efficiency of the schools would be greatly augmented by the organization of a permanent board of Territorial examiners, for the purpose of passing upon the qualifications of all persons presenting themselves to be examined for positions to teach in the public schools of the Territory, such a board to be composed of persons of experience in teaching and in school work of the Territory; and by reason of the further experience to be acquired in this particular work they would be accounted the most reliable authority in determining the value of the answers submitted to them. I am confident that a system of this kind would insure the employment of teachers upon the ground of their fitness, scholastically, morally, and socially, and would redound to the greatest possible improvement in the schools of the Territory. The certificates to teach thus obtained would be valid in every county for the period for which they would be issued, and would free their holders from the annoyance of frequent examinations, to which they are now subjected. Provision should be made establishing a limit to teachers' certificates of all grades. Under the present law they are valid indefinitely.

If a Territorial board of examiners be provided for, it would not be absolutely necessary for all candidates to appear in person for examination. The questions prepared by the board could be sent to some reliable person in each district, before whom the candidates could answer the questions in writing, and after the same had been examined by the Territorial board, a certificate would be issued according to the merits of each candidate.

SCHOOLHOUSES.

Some of our school districts, towns, and cities have erected handsome and commodious schoolhouses. Among others may be mentioned Clayton, Taos, Albuquerque, Socorro, Deming, Silver City, Gallup, Eddy, Roswell, Las Cruces, and others. These schoolhouses are models of neatness, cheerfulness, health, and comfort. They are pleasant homes for the pupils, make school attractive, and change the

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work from a disagreeable task into a welcome privilege. Our incorporated cities have erected schoolhouses some of which are perfect specimens of the improvements of modern school architecture.

TEACHERS' INSTITUTES.

The utility of teachers' institutes as a means of increasing the efficiency of the teaching corps and arousing public sentiment in favor of public education is becoming from year to year more generally recognized.

Institutes of this sort, to be productive of good, must be understood and appreciated. They must be adopted from choice and not from compulsion. Educators and school officials will always be found to advocate and favor whatever attempts to promote the good work of public education. There are many good reasons for holding these institutes. All States which provided for them early in the history of the public school system have adhered to them more closely as time has progressed. They are regarded as an essential part of the general work and school legislation of the State. Everywhere it is held to be as binding on the teacher to attend the institute, at least once a year, as it is for the child to go daily to school during the term. These institute meetings become popular wherever they are held; the people approve them because by their means they are enabled to perceive the character of the teaching and the methods followed in the training of their children. They are thus instructed themselves, and induced to renounce many prejudices that they may have entertained. The great object of institutes is to instruct teachers in the philosophy of their profession. Lectures are delivered to point out how the teacher should conform his teachings to the laws of the development of the child's mind.

It is clearly the duty of the Territorial legislature to provide the means for institute work. During the past year almost every county in the Territory held an institute. The attendance was fair and the work accomplished very satisfactory. When the Territory provides the means with which to conduct the institute the attendance will be more than double, and many poor teachers who could not otherwise attend will get the benefit of such reunions. I suggest that the Territory be divided into five institute districts and there be appointed by the Territorial board of education a district conductor for each separate district; that all rules and regulations for the conduct of this institute be made by the Territorial board of education, and that for the defraying of the necessary expenses of the work the legislature appropriate an amount which it may deem sufficient.

Our law concerning normal institutes is a good law, but it is weak in two particulars. It imposes no penalty for nonattendance and requires the teachers to pay a fee for the defraying of the necessary expenses of the institute. The latter many teachers can not do. If the law is amended so as to impose a penalty for nonattendance and a small sum of money set aside from the general school fund, say about $100 from each county, for institute work, the attendance will be more than double and the results will be very gratifying.

SCHOOL DIRECTORS.

The present law provides that school directors when once elected shall remain in office until their successors are duly elected and qualified. Under this law numerous abuses are committed for the reason

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that the directors are the same persons empowered to issue the call for elections and to hold the same. In a great many instances no elections are held at all, and consequently the directors perpetuate themselves in office indefinitely. Unless the law is properly amended abuses will continue to be committed, as there is no power to remedy the evil except by invoking the aid of the courts.

In this connection I would respectfully suggest that a law be passed requiring all county superintendents to have their offices in the county seats of their respective counties. Quite a number of our present superintendents have their offices in remote places, which causes great inconvenience to all parties interested in school affairs.

UNIVERSITY OF NEW MEXICO.

The University of New Mexico was established by an act of the Territorial legislature of 1889, and the location of the institution fixed at Albuquerque, N. Mex. As soon as funds would permit, the regents secured the necessary area of land required by the enacted law and commenced the construction of the building. In May, 1892, the structure was completed and accepted by the board of regents. On June 15, 1892, the normal department of the university was opened for students, and during the following September a preparatory department was opened. This institution has been in successful operation five years, having conferred during this time fifteen diplomas of graduation in the regular courses and many certificates of satisfactory work in the more limited courses of study. The standard of work has risen steadily, and the facilities for the study of the liberal arts and sciences are being continually increased to meet the growing demands of the community. Material development has kept pace with internal growth, and the university, with its commodious buildings and growing apparatus and library, can now offer better facilities for study and scientific research than ever before, embracing a wide variety of subjects taught by specialists in every branch.

The University of New Mexico, located at Albuquerque, is the natural and logical head of education in the Territory. It is equipped and supported wholly by Territorial appropriations and receives ample support. It is expected that when New Mexico secures statehood the university will receive a liberal grant of public lands, as similar institutions in other States have, when its usefulness will be very much increased.

There are three departments—the academic, commercial, and normal—the latter having been organized with the special view of training competent teachers for the public schools. Admission to the academic course is either upon a certificate from some other school of acknowledged thoroughness or upon examination in English, history, grammar, and arithmetic.

During the past year the board of regents built a substantial gymnasium and equipped it with the best apparatus obtainable. The results of training in this line have been closely noted, and have proved satisfactory in every respect.

Good board can be obtained in Albuquerque for $20 per month. At the present time the university has no work at its command for students, but a number of students have found congenial employment about the city from which they have been able to defray a large portion of their expenses. During the coming year a special effort

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will be made to assist students who so desire to find employment for their hours of recreation.

The normal department is especially recommended to those who intend to teach. Thorough instruction is given in such branches as are taught in the graded and high schools, and in the history and theory of teaching, including correct methods of study, instruction, and discipline.

The several courses of study in the university have been prepared with great care by experienced educators, and while the institution is young, it is expanding to meet the growing demands of the times, and it is certainly deserving of the support of the people of New Mexico, for it rests alone with the Territory to realize the promise of this rising institution.

The university has had a fairly prosperous year. The policy of dropping the lower grades has been continued. In doing this about thirty students were refused admission. Most of these attended the city public schools during the year. The number enrolled in the university during the past year was over eighty; the average age of those enrolled the current year is a little above twenty years. This gives some idea of the maturity of the students; whilst we have not advanced far beyond the college preparatory stage, it is believed that the real scholarship of our students ranks much above other schools whose classes have more advanced names.

From the normal department several young men and women were graduated. These were mature, strong persons, and they will no doubt succeed as teachers. To give a more exact idea of the work of the university, we append a list showing the number of students pursuing certain branches of study. In this list English includes the various branches of that study, such as grammar, rhetoric, literature, etc. Algebra, 20; arithmetic, 13; astronomy, 5; botany, 4; book-keeping, 18; chemistry, 6; drawing, 16; English, 48; theory of education, 4; ethics, 4; Latin, 26; psychology, 4; physics, 5; physical geography, 6; Spanish, 37; stenography and typewriting, 28; school management, 4; zoology, 16.

Material advancement has been made along several lines. The library is steadily growing, both from the Congressional publications that it receives as Territorial depository and from purchases made from the matriculation fees. It now contains over 1,000 bound volumes and about 400 pamphlets. These have all been catalogued according to the most approved system, and thus the library is very valuable for ready reference. It is much used by both students and faculty, and the public is welcomed to it at all reasonable times. Funds for the enlargement of the library are greatly needed.

In the department of science some advancement has been made. That department has been assigned to a separate head, and some important apparatus, such as an electrical machine, air pump, etc., has been added.

The chemical laboratory has also been improved. But in all these improvements the board has been compelled to practice the most careful economy, often to the hindrance of advancement of pupils. A special teacher of Spanish has been employed, and from the large number of students who have taken that subject it is easy to infer the value placed upon it. Those branches which appear to offer some immediate pecuniary return attract students. It is doubtful whether any other offers greater commercial value than Spanish.

Two prosperous literary societies have been formed, which afford

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opportunities for the acquirement of experience and freedom in public address, and open avenues to social culture; an athletic association has promoted interest in physical culture, and students have acquired editorial experience by issuing a very creditable "Annual." No cases of discipline have marred the harmony of what may be regarded as a very successful year.

Taking all things into consideration, this school has been very successful, and each year finds it improving.

On behalf of the board of regents of the University of New Mexico, and in accordance with the requirements of the statute, I submit a report of that institution for the year ending October 31, 1898.

There will be found attached hereto a statement of the receipts and expenditures for the period above mentioned, from which it will be seen that the expenditures have amounted to $13,903.52 and have exceeded the receipts during the same period by the sum of $1,238.52. It is to be noted that these expenditures exceed those of the previous year by the sum of $2,914.14. This increased expense is principally in the items of salaries and insurance. We have paid out for salaries $1,576.16 more than during the previous year, and we have paid $753 for insurance which is to run for a term of three years. It has also been absolutely essential to expend considerable money upon laboratory and gymnasium equipment.

This increase of expenditures appears to have been unavoidable. During the previous year we had been able to secure the services of some instructors for little or nothing while they were pursuing special studies under the direction of our faculty, but it was not to be expected that this should continue. We have been compelled to add to the number of instructors in order to meet the demands made upon us and to keep up the work which had already been begun.

Your attention is called to the annual catalogue of the university, from which it can be seen that the character of the work of the university is growing in importance and breadth, and, as we believe, the public is receiving a greater return for the small amount expended than is given by any institution of like character anywhere in the United States. In order to continue this work, however, it is absolutely necessary that there should be an increase in the revenue of the institution. Unless provision is made by the coming legislature for this, it will be absolutely necessary for us so to reduce our expenses as to cripple the institution and possibly lead to our losing the services of the best members of our faculty. Our information is that there is no similar institution in the country paying as low salaries for the same class of services. We have thirteen persons employed in giving instruction in the university at salaries which aggregate $937.33 per month. We trust, therefore, that you will strongly recommend to the legislature that provision be made in some way to increase the income of the university.

This is especially of importance not only for the purpose of paying current expenses, but some method should be provided for creating a fund for building purposes. Upon this point I desire to quote from the report which was made to one of your predecessors in 1896, as the statements and requests then made are still applicable to our condition:

"The board of regents desire to call your attention, and, through you, the attention of the legislative assembly, to the fact that it was the intention in creating the university to establish an institution which would be of benefit, not to any particular locality, but to the inhabitants of the whole Territory. An examination of the enrollment of the students will show, however, that a large majority of them reside in Albuquerque, where the university is located. Since the opening of the present school year there has been, I believe, some increase in the number of students from other places, but still the number of such is not nearly as great as it should be. In the opinion of the board this is principally due to the unwillingness of parents and guardians to send their children and wards to a town like Albuquerque, where these young people would be compelled to live in boarding houses or hotels, practically free from any supervision or control by the school authorities. The erection of a building where students from abroad can be boarded and lodged, which shall be conducted under the supervision and control of the faculty, is imperatively demanded in order to make the institution what it should be. An examination of our receipts and expenditures will show that with our present income it is absolutely impossible for us to do anything in this direction which would be of any substantial value. Notwithstanding the utmost economy, we can do but little more than bring our expenditures within our income. We earnestly urge upon you that you recommend to the legislature that

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provision be made so that we may have a building fund of not less than $20,000 provided in addition to the money now appropriated. If we could double the number of students in attendance they could be instructed and cared for with no great increase of ordinary current expense."

It is true that in consequence of the former report and the statements therein contained the legislature did attempt to provide a means for the board of regents to obtain funds for building purposes, as will be seen by reference to Chapter LXII of the laws of 1897; but it has been quite impossible up to the present time for the board to obtain any money under the provisions of that statute.

Very respectfully,

F. W. CLANCY,
Secretary and Treasurer.

Receipts and expenditures during year ending October 31, 1898.

RECEIPTS.

From Territory	$12,440.00	
Tuition fees	275.00	
Laboratory fees	50.00	
		$12,765 00

EXPENDITURES.

Salaries	10,613.16	
Expense	433.97	
Building	8.00	
Improvements	23.85	
Fuel	330.75	
Furnace	2.00	
Insurance	753.00	
Repairs	96.60	
Furniture and fixtures	33.00	
Laboratory	230.75	
Natural history	14.50	
Library	359.97	
Gymnasium	200.46	
Water	63.20	
Scientific apparatus	265.95	
Advertising	272.30	
Bacteriological laboratory	52.08	
Stationery	4.80	
Telephone	24.00	
Commencement, 1898	121.88	
		13,903.52
Excess of expenditures over receipts		1,138.52

THE NEW MEXICO MILITARY INSTITUTE.

The youngest, most vigorous, and most thoroughly typical of all the Territorial institutions is without doubt the military school at Roswell. Though it has received less money than any of the schools, costing the Territory less than $30,000 to date, the results have been almost phenomenal. The regents make a biennial report to the governor, and an annual inspection by the adjutant-general is required by law. Chiefly from the last report of the regents (January 2, 1899) and from the report of the adjutant-general (May 12, 1899) the following is compiled:

The legislature of 1895 authorized the issue of bonds to the amount of $15,000 to erect suitable buildings for the military institute, and an annual tax levy of twenty one-hundredths of one mill for the school's maintenance. The National Congress of 1895–96 failed to legalize the acts of the preceding New Mexico legislature, and in consequence it was impossible for the regents to negotiate the said bonds, so that it was not until June, 1897, that they were finally sold and the proceeds rendered available.

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From February, 1896, to June, 1897, however, the regents received from the auditor a total of $8,342, of which sum $2,748.33 had been expended previous to January 1, 1897, in the erection of a waterworks plant, pump house, machinery, and necessary outbuildings, fencing the grounds, and various minor incidental expenses, which will be found carefully itemized in the regents' report to Governor Thornton, December 31, 1896.

Thus on June 2, 1897, the regents had available the following:

Proceeds from sale of bonds	$14,250.00
Unexpended balance of total received from auditor	5,593.67
Total	19,843.67

Pending the negotiation and sale of bonds, plans for school buildings had been accepted, surveys had been made, the grounds fenced, planted, and irrigated, the waterworks system constructed and operated, and all things as far as possible made ready for the erection of necessary school buildings.

Work was promptly begun after final sale of bonds and in March, 1898, the school buildings were accepted.

The main building is of brick, trimmed with red sandstone, three stories, with additional basement story of gray limestone, containing four large section rooms and study halls, forty-five bedrooms, library, and offices, a large mess hall, kitchen, laundry, armory, storerooms, closets, and bathrooms.

The system of waterworks and sewerage is very complete, afford hot water and cold water on every floor, plunge baths and shower baths, and complete drainage. The water-closets are the best obtainable; the 10,000-gallon tank, with bottom 52 feet from the ground, gives a pressure sufficient to throw water over the main roof and sweep the main sewer at pleasure. This sewer ends at a much lower level 500 yards away.

The entire building is piped for gas and every room, hall, and stairway is so lighted. The acetylene gas plant is cheap, safe, and very effective. The generators are placed 100 feet from the building and give a total of 2,500 candle power at a cost of about $1 per night.

The building is heated by steam, the large boiler being located in basement near the closets.

The contractor lost something over $1,000 and his time, but the Territory has one of the best school buildings in the West.

In January, 1898, the regents employed James G. Meadors as superintendent, and in March following he reported for duty and set about the organization of the school.

In April, 1898, four additional instructors were employed and ordered to report for duty the following September.

The usual circulars and advertisements were printed and industriously circulated and the superintendent ordered to make a vigorous personal canvass of the entire Territory. This was done with great effect and at insignificant expense.

During the spring and summer the buildings were completely furnished with the best equipments obtainable for a first-class boarding school, and the schoolrooms with the best desks and seats now in use.

One of the regents, an experienced merchant, was sent East and gave fifteen days of his time to purchase of furnishings.

The furniture, bedding, kitchen, laundry, and dining-room equipments are not only the best obtainable by the regents for the money

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at their disposal, but the best now in use at boarding schools. Few hotels are so well or so substantially equipped.

On September 6, 1898, the regents formally opened the school, and 85 students were admitted during the first week. There are, at the date of this report, 105 students in regular attendance.

The attendance so far exceeded expectations that more room was at once necessary. A 10-room cottage was erected on the grounds for the families of superintendent and domestics at a cost of $2,087.

Our barracks are, however, still crowded, and we need quite twice as much room as at present.

We are almost wholly without scientific apparatus, we have no library save a few hundred books owned by private parties, we have no society halls, gymnasium, or stables, and we find that we need not less than thirty more bedrooms for cadets.

We need quite twice as great accommodations as we have at present, and if supplied at once we believe the school could be made well-nigh self-sustaining within a few sessions.

Eighty Springfield rifles, model 1884, with their accoutrements, were furnished by the Adjutant-General, for which satisfactory bond was made. But these rifles are rather heavy for cadet use, and the school really needs 100 cadet rifles.

The school also needs at least 50 sabres and cavalry accoutrements, as provision has been made to teach cavalry tactics, in which branch of the service the Western soldier henceforth should be most proficient.

The school also needs at least enough cannon and ordnance supplies to render possible instruction in artillery drill. We have now ample facilities otherwise for giving such work, and trust that the needed guns and supplies will be furnished by the Territory or National Government.

The military features of the school have been emphasized by the regents in all possible ways, for it is not intended that the object of creation shall be for a moment forgotten.

Great care has been taken with our commissary, which has been well managed. The food supplied for cadets has been thoroughly good, wholesome, and abundant. The lodging has been excellent.

The health of cadets has been carefully attended to by a surgeon regularly employed, while the enforced exercise, baths, diet, study, and sleep have placed the boys, without exception, in perfect physical condition. In order, however, to maintain a good commissary, it is necessary that the school should earn a large sum of money outside of aid received from the Territory, and we question if this is possible unless our accommodations are increased.

It would undoubtedly appear the most economical course to erect sufficient buildings to render the school practically self-sustaining—a matter that now seems possible.

Total cost of school up to date has been as follows:

RECEIPTS.

Total amount received from Territorial auditor	$12,842.00
Proceeds sale of bonds	14,250.00
Received for board and tuition first half session 1898–99	5,094.50
Received for board and tuition second half session 1899	500.00
Total receipts	32,686.50

DISBURSEMENTS.

Lithographing and selling bonds	$146.16
Waterworks contract	2,034.00
Fencing	505.50
Tree planting	132.25
Pump house	96.00
Procuring title to land	85.00
Sewer contract	557.75
Insurance	272.58
Cost of buildings	19,195.40
Furniture and fixtures	3,003.06
Salaries	2,266.60
Domestic help	600.00

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Commissary	$1,993.10
Expense	893.71
Surgeon and medicines	111.55
Laundry	132.45
Lights and fuel	450.39
Office	211.00
Total disbursements	32,686.50

All bills are carefully receipted and filed and subject to inspection at any time.

In the selection of instructors the regents have employed vigorous men, of experience, and graduates of the best colleges; for they have believed an army of useless employees is in this country a needless expense and a business incumbrance.

The same is true of all domestics and other employees.

It has been the aim of the regents to buy nothing not needed, to have nothing not thoroughly usable, and to hire nobody for whom there was not plenty of work ready and waiting.

There have been no jobs, political, social, religious, or otherwise; contracts have been let by sealed bids: the prices have been the best procurable; nor has anything been done except on sound business principles.

The course of study at present is the usual four years of military schools, with three years training school work below the fourth or entrance class.

It is not desirable to maintain more than one or two such preparatory classes.

Hereafter cadets holding appointments from their respective counties must be able to enter the fourth class.

It is probable that the total annual cost of maintaining the institute will somewhat exceed $15,000.

Without undertaking to institute any sort of comparison, the fact remains that, up to now, no school in New Mexico or the entire Southwest ever did so much with so little within so short a time, or took so commanding a position among the people to whom it looks for support.

While we are persuaded that the system upon which it is operated is best adapted to the conditions that now obtain in New Mexico, we are also convinced that the school is wasting no money on superficial fads, impossible ambitions, or impractical schemes.

It has been the design of the regents to make a training school of the first order, modifying that design as needs and conditions are modified, growing as grows the State, advancing as the people advance.

We believe the facts justify this presentation of the case, and we are sure that the school is a credit to the Commonwealth. (Report Regents of New Mexico Military Institute to Governor Otero, January 2, 1899.)

The legislature of 1899 authorized a tax levy of twenty-seven and one-half one hundredths of 1 mill annually for the institute's maintenance, but did nothing toward the erection of more buildings and quarters. This would probably have been done had the regents less faithfully represented the literal facts. It seemed almost incredible that such phenomenal progress could be made in so short a while, or that such energy, thrift, and broad-minded views would obtain where it was possible to use every dollar appropriated for needs purely local and ends more or less selfish, and very little was really expected by the Territory at large.

In April, 1899, the superintendent of public instruction, who, with the governor, is an active regent of this school, made a visit of official inspection. He gave no notice of his visit until actually on the grounds.

He carefully examined the course of study and general management in all details. He found that quite one-third of the attendance consisted of Spanish-Americans. The latter were very enthusiastic, declaring that nothing could be better or fairer than their treatment, and manifested in both bearing and convictions the supreme triumph of loyal Americanism.

The superintendent of public instruction expressed great satisfac-

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tion with the fidelity of the regents, the management of Superintendent Meadors, and the efficiency of the instructors. He pronounced it the "leading Territorial institution" and the "most representative school in the West."

Acting under Special Order No. 4, dated Santa Fe, May 4, 1899, the adjutant-general made his annual inspection of the New Mexico Military Institute as required by law. In his report to the governor, dated May 12, 1899, he says:

The inspection was made on the 8th day of May, 1899, and was as thorough in every respect as the same could be made. The notice to the superintendent of the intended inspection was received by him on the same day of my arrival in Roswell, so that there was but little time for preparation, and the conditions I found must necessarily have been the ordinary or normal condition of the institution. I inspected every room in the building, beginning with the dormitories. I found the bedsteads used were of cast iron, made for one person, each room being occupied by two students. I tumbled the bedding off and closely examined the mattresses and bedding, and found the same fresh and clean and free of vermin. The floors and walls of the buildings throughout showed most cleanly care. Especial attention was given to an examination of the closets and the drainage therefrom. I found that a sewer pipe had been extended from the school building in a southeast direction to the river, affording perfect drainage from the closets and bathrooms. The plumbing seemed to be in perfect order, and I was unable to detect any bad odors in or about the closets, or about the entire building.

I made a close examination of the groceries and provisions found on hand, and in every instance found the quality excellent and free of adulteration. I dined at the institution and was served with the same kind of food that was given the students. I found the food plentiful, well cooked, well seasoned, and in fact just such a dinner as may be found in the homes of people of middle life all over the country.

I witnessed an exhibition drill of the cadets, both in company and battalion formation, and was greatly pleased with their movements, which showed excellent instruction and discipline. I made a careful inspection of the cadets, of their arms, accoutrements, and uniforms and found all in good condition. The arms furnished by the Territory are kept in a room in a basement set apart for that purpose, and appear to receive good care. I found 65 cadets present for duty, and they appeared very proficient in the most recent system of tactics, and even the smallest cadets were familiar with modern tactics, the manual of arms, and the advanced bayonet exercises especially adapted to the Krag-Jörgensen rifle.

The college building is a handsome substantial structure of brick containing three stories and a basement, situated about one-half mile north of the business center of Roswell. The grounds extend over 40 acres of land overlooking the town. The situation is a beautiful and a healthy one. The building contains 30 nice, airy, wholesome bedrooms, besides class rooms, office, kitchen, dining room, pantry, laundry, bathroom, and closets. The furnishings are comfortable and substantial. The recitation rooms are equipped with excellent twentieth-century chair desks, which are said to be the most comfortable now in use. The building is heated by steam throughout from a large boiler in the basement, and there is a good supply of hot and cold water on every floor. The building is lighted by an excellent acetylene plant located about 100 feet away. The water supply is furnished by a tank of 10,000 gallons capacity, which is kept filled by means of a steam pump.

An examination of the course of study reveals the practical nature of the school. Four years of preparatory work are required, so that any student can enter who knows how to read, write, spell, and apply the fundamental rules of arithmetic. The preparatory course is followed by four years of collegiate work. The studies are such as are usually found in institutions of like character. The text-books in use in the preparatory course are those adopted for use in the Territorial public schools. In addition there is taught the art of war, the manual of arms, and in fact everything usually taught in high-class military schools. Especial attention is paid to proper gymnastic exercises and reasonable and healthful athletic sports necessary to the physical, mental, and moral good of the students.

There are employed in the institute a superintendent, commandant of cadets, three instructors, matron, engineer, two cooks, janitor, and laundryman at a cost of $6,000 per annum. The superintendent, Maj. James G. Meadors, is a graduate of Washington and Lee University, of Virginia, and is a gentleman of fine culture, full of energy and zeal, devoted to the institution, ambitious to succeed,

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and, if properly supported, will make the institute so successful that every citizen of New Mexico may well be proud of it. The success already attained, the progress made in a single year, is highly creditable to the superintendent and to his able assistants, as well as to the people of Roswell, who take great and commendable pride in the institution. Mr. J. W. Willson, commandant, a graduate of the Virginia Military Institute, is an excellent man for the place. Of the other instructors, Mr. W. S. Fitzgerald, a graduate of Vanderbilt University; Mr. W. H. Whitten, graduate of Massachusetts Institute of Technology; Mr. L. Martini-Mancini, graduate of military school of Italy, ex-lieutenant of cavalry, I saw but little. They are all gentlemen of fine appearance and address, are represented to be excellent instructors, and give to the superintendent a hearty and loyal support. Mrs. Meadors, the matron, is an excellent, kind-hearted lady, who gives her whole time and care to the institution, takes great pride in the success of her husband's administration, and contributes very materially to such success. * * *

The institute is provided with 80 Springfield rifles, calibre 45, and their accoutrements. These were furnished some months ago under your order, although the institute was not entitled to them under any law in existence. They are simply regarded as a loan until such a time as the necessities of the National Guard may require their return. In my opinion provision should be made by law for properly equipping the institute with arms. The Springfield rifle is not at all suited to the younger cadets, being entirely too heavy. They should be supplied with a piece of modern artillery, sabres, and other arms necessary to teach and illustrate the art of war.

The eminent success of the institute in this the first year of its existence gives great encouragement for the future. This hope, however, may be frustrated by a failure to make prompt provision for its immediate necessities and for its expansion. Already the dormitories are filled to the limit of their capacity. There are 30 students in attendance who live or board at Roswell, outside of the institute. I regard it as of the utmost importance, and necessary to the success of the institute, that all students should reside in the barracks.

There is an immediate demand for more commodious quarters. The institute should be provided at once with 30 more bedrooms, a room for a library, gymnasium, society halls, and storehouse. The laundry should be removed from the basement and placed in a separate building. I am aware that much of this can not be accomplished without legislative authority, but if there exists authority in the board of regents to provide for the more pressing needs of the institute by the construction of a temporary board structure, I should strongly recommend its exercise. (Report of Adjutant-General to Governor Otero, May 12, 1899.)

The New Mexico Military Institute has thus within a single year completely filled the quarters provided and which were expected to suffice for a dozen years, and fully refuted the almost slanderous assertion that the native population cares nothing for education and has not yet become an assimilated part of the Republic. The governor is convinced that the superintendent of the New Mexico Military Institute correctly appreciates the situation. In a recent interview he said:

Our course of study really embraces eight years, four of which are preparatory and four collegiate. The latter four are modeled upon the West Point course, as far as we are able. We give in the collegiate work four years in mathematics, two years of scientific work, three years in Latin, two in German, three in Spanish, and four in English. We think that it is now of vast importance that young men should know thoroughly the English and the Spanish languages; have a sound business training, but a training of habits and methods as well as mere knowledge of details; have some ideas of practical construction and even of fortification, and a fair knowledge of military tactics. We think our commercial relations as well as government service will presently require large numbers of young men with just such training, nor can we fail to note the analogy between present conditions and those which have obtained for more than a century in British India, where there has always been a demand for young men thus trained. As to New Mexico, I do not see a particle of difference between the cadets of Spanish and Anglo-Saxon extraction. After twenty years' experience in the management of school boys I cheerfully attest that I have handled none more tractable, more decent, better mannered, more intelligent, or more thoroughly in earnest than these Spanish-Americans. Of course all influences to which they are subjected are intensely Americanizing, but I find them, to begin with, profoundly patriotic.

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It is well to note here that fully 95 per cent of the inhabitants of Chaves County, where the institute is located, are Anglo-Saxon, and a large majority originally from Southern States, where race prejudice is supposed to run high.

All points considered, the governor thinks that the military institute is the most hopeful sign and the most convincing argument, educationally, that could be adduced as to New Mexico.

Hundreds of reputable witnesses attest that there is no better commissary at any eastern school; that the military work is thorough and according to modern usages and standards; that the instruction is excellent, the discipline thorough, the treatment of all fair, just, impartial, and absolutely honest.

It would be impossible to find a better location for a military school, as there is practically neither rain nor snow during the entire session, and hardly a day when the sun does not shine. The great abundance of excellent water at Roswell, the great number of orchards, trees, and variety of industries are also great advantages.

The earnings of the institute for the year ending June 7, 1899, exclusive of funds from the Territory, were something over $9,500, derived entirely from tuition fees. The disbursements for the year are reported as being about $23,000. It is the governor's opinion that affairs are economically administered, and the entire management energetic and effective.

Without prejudice or undue partiality, the conviction is forced upon a calm observer that such a school in such a country, properly managed, will accomplish great results, and beyond a doubt the military institute at Roswell has not only fully realized the most sanguine hopes, but has more than tripled conservative expectations and demands.

The New Mexico Military Institute is owned and supported by the Territory of New Mexico, and was first opened for students in September, 1898.

The institute is located at Roswell, 3,700 feet above the level of the sea, in the best-watered region between the Indian Territory and California. The climate is perfection—little rain or snow during the session, dry atmosphere and perpetual sunshine.

The school receives about $12,000 annually from the Territory and during the session of 1898–99 earned $9,500 additional in tuition fees, enrolling 105 cadets.

Buildings, etc., cost $30,000; thoroughly furnished and equipped, four stories, gas-lighted, and steam-heated; hot and cold water on all floors; modern bath, lavatories, and closets; complete system of waterworks, sewerage, and fire apparatus. Everything new and modern.

There are five men instructors, who are graduates of the best colleges. Health and development of students carefully looked after; ample facilities for all athletic exercises; daily drill, regular sleep, diet, and exercise; surgeon regularly employed. No better subsistence department in the Union; good, abundant food, clean rooms and beds.

The course of study embraces eight years, and includes English, Spanish, Latin, German, French, mathematics, and natural sciences. Instruction in bookkeeping, typewriting, and stenography in both English and Spanish.

No politics, no sectarianism, no extravagance. Students must remain within the inclosed limits day and night. Excellent discipline and moral training.

Three terms of three months each. Examinations and reports to guardians at end of each term.

The school is reached by the Pecos Valley and Northeastern Railway from Pecos on the Texas and Pacific Railway, or from Amarillo on the Fort Worth and Denver Railway, or by Star Route from Lincoln or Fort Sumner.

Session begins September 6, 1899, and ends May 31, 1900.

FACULTY.

Col. J. G. Meadors, superintendent, Washington and Lee University.
Maj. J. W. Willson, commandant cadets, Virginia Military Institute.

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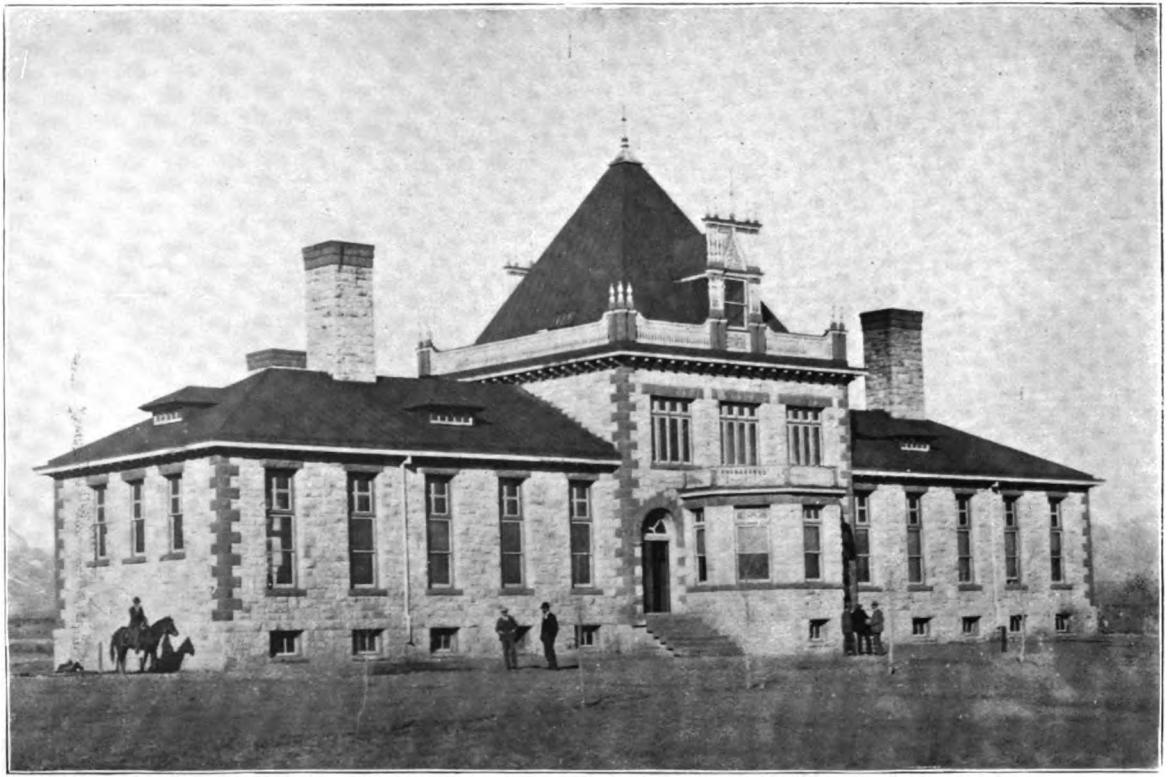

NEW MEXICO SCHOOL OF MINES AT SOCORRO.

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Capt. W. S. Fitzgerald, Vanderbilt University.
Capt. L. Martini-Mancini, School of Arms, Italy.
Capt. W. E. Davis, Washington and Lee University.

COUNTY APPOINTEES.

The commissioners of each county in New Mexico appoint one cadet annually to the New Mexico Military Institute. Appointee receives board and tuition free. He must deposit on entrance a fee of $50 for laundry, medical attendance, breakage, and incidentals.

NECESSARY EXPENSES.

Tuition, board, lodging, laundry, and medical attendance, September to June, $200; uniform (blouse, trousers, and cap), $12.50 to $19; books and stationery, $6 to $10.

COURSE OF STUDY.

Preparatory classes.—Class A: Spelling, reading, geography, language lessons, arithmetic, writing.
Class B: English grammar, spelling, reading, arithmetic, geography, United States history; writing.
Class C: English grammar, reading, spelling, United States history, arithmetic, physical geography, writing.
Class D: English grammar, arithmetic, spelling, algebra, general history, physiology.
Collegiate classes.—Fourth class.—First term: Algebra, rhetoric, English history, Spanish, Latin, drawing.
Second term: Algebra, geometry, rhetoric, English history, Spanish, Latin, drawing.
Third term: Algebra, geometry, rhetoric, English history, Spanish, Latin, drawing.
Third class.—First term: Geometry, English literature, Spanish, Latin, drawing.
Second term: Geometry, English literature, Spanish, Latin, trigonometry, drawing.
Third term: Trigonometry, English literature, Spanish, Latin, surveying, drawing.
Second class.—First term: Analytical geometry, Spanish, German, Latin, physics, tactics.
Second term: Analytical geometry, Spanish, German, Latin, physics, tactics.
Third term: Analytical geometry, Spanish, German, Latin, physics, tactics.
First class.—First term: Calculus, astronomy, geology, chemistry, German.
Second term: Calculus, astronomy, geology, chemistry, German.
Third term: Calculus, Spanish history, geology, chemistry, German.

THE NEW MEXICO SCHOOL OF MINES.

The New Mexico School of Mines is a Territorial institution, founded by the Territorial legislature in 1889. The act creating it provides that the school of mines shall be supported by an annual tax of one-fifth of a mill on all taxable property within the Territory. This levy was increased by the Territorial legislature, in 1899, to twenty-seven and one-half hundredths of a mill.

The legislature located the school of mines at Socorro, the county seat of Socorro County. Its campus consists of 20 acres of level meadow land within the irrigable district, 1 mile west of the Rio Grande and 1 mile northwest of the railroad station. The laboratory building is situated nearly in the center of these grounds.

Socorro, a city of 4,000 inhabitants, is on the western slope of the Rio Grande and on the main line of the Atchison, Topeka and Santa Fe Railroad, about 75 miles south of Albuquerque and 179 miles north of El Paso, Tex. It is at an elevation of about 4,600 feet above sea, and, having a salubrious climate, is preeminently a pleasant and healthy location. Socorro is an attractive city for health seekers from the East who need a mild and dry climate, and every year many persons seek its

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hospitalities. In the city are two hotels, several good boarding houses, three large public-school buildings, and a court-house that cost $45,000. The church denominations represented here are the Baptist, Presbyterian, Episcopal, Methodist North, Methodist South, and Catholic.

Socorro has one of the best public water works in the Territory, furnishing a very soft, pure water. The supply comes from hot springs that issue from the base of the Socorro Mountains, about 4 miles west of this city. Two weekly papers are published here. There are also a brewery, artificial ice works, roller-process flouring mill, and a fire-clay plant, which manufactures brick, pottery, tiling, sewer pipes, crucibles, scorifiers, muffles, and almost everything requiring a fine grade of fire clay.

ADVANTAGES FOR STUDY.

The pure air and water, cool mornings and evenings, high elevation, and absolute freedom from malarial influences are some of the climatic conditions with which Socorro is favored and which are essential for thorough and systematic study. Living expenses here are as low as in any other city in the West. While some of the schools of mines in the East charge $200 or more per year for tuition, this institution only charges its students a nominal tuition fee for materials consumed.

The New Mexico School of Mines enjoys the natural advantages of being located in the midst of a region peculiarly rich in minerals of nearly all kinds, and is within reach of the most varied geological conditions, all of which are within a radius of 20 miles of Socorro. Almost the entire geological column, from the precious metal bearing formations of the Archæan to the coal beds of the Tertiary, is here exposed. The industrial processes connected with mining and metallurgy may be also seen at Timber Peak, Magdalena, Kelly, San Pedro, Hillsborough, Kingston, Lake Valley, Cooks Peak, Georgetown, Silver City, Pinos Altos, Los Cerrillos, Gallup, Carthage, and elsewhere within easy reach of the school. These illustrate the most modern methods of mining, milling, ore dressing, concentrating, smelting, lixiviation, chlorination, etc., as well as the native Mexican methods, which are worthy of careful study, since the like can not be seen elsewhere in the United States.

The grounds immediately adjacent to the school of mines include irrigable land, plateaus, and mountain formations, all affording an excellent field for practice in surveying, laying out of railroads and irrigating canals, topography, mine engineering, and geology, so that students can be prepared at the very doors of the school in these branches, which usually require tedious excursions from Eastern schools of mines.

The Territory of New Mexico, so far as concerns the mountainous portion, which comprises nearly two-thirds of its area, and is nearly all mineral bearing, is less known geologically than, perhaps, any other section of the United States—Alaska excepted. A slight study of the plateau region of the northwestern portion of the Territory has been made under a recent United States Geological Survey, but only in a general way. No attempt has ever been made under Government auspices to investigate closely the geological structure of the New Mexico Mountains such as has been carried out in the other Rocky Mountain States and Territories, or to study the conditions of New Mexican mineral deposits, as has been done in Colorado by Emmons, in Nevada by Curtis, in California by Becker, and in other States by distinguished investigators.

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The field for original scientific research in New Mexico is unrivaled by any other mining section, and the opportunities here offered are not neglected in the plan and scope of instruction. It is proposed that much of the advanced professional work of the school shall be of an original nature, to the end that the graduates may be skilled theoretically and practically in the very problems which they, as professional men, will be called upon to solve. In connection with this work it is hoped to enlist every chemist, geologist, mining engineer, metallurgist, and other scientific investigators capable of observing and recording professional experience in the Territory. This work will be carried on by the advanced students, under the direction of the professors, and will involve the collection of notes, sketches, maps, and specimens, and the results of directed observation in all matters relating to the sciences and arts embraced in our courses of study. The results of these observations, together with illustrations and analysis, will be published from time to time in the scientific press and in special bulletins issued by the school. While this plan of instruction will furnish material for practical and original research on the part of the advanced students, it is believed that it will also be of great practical utility to the industries of the Territory, and that in an important sense the school will have for its students not only those who may study within its walls, but also the greater part of the educated mining population of the Territory.

The subjects for such research in geology, mining, and the reduction of the ores of lead, silver, gold, and copper are so numerous that it is impossible to attempt to do more here than to mention the fact that the conditions of climate, drainage, water supply, geological structure, etc., in New Mexico differ greatly from the conditions existing in other parts of the Rocky Mountains, giving rise to new problems in practice. But these problems are not by any means all that deserve attention. The investigation of the ores of iron, manganese, aluminum, cobalt, nickel, and tin, together with the beds of coal, saline salts, alums, building stones, mineral paints, cement rocks, fossil meals, etc., will be directly in the line of the advanced laboratory work of the school, and every student who undertakes such work will be encouraged in every possible way to accomplish the best results. During the senior year every candidate for graduation is required to make a thorough scientific investigation of some subject connected with his course of study and to embrace his results in a thesis.

COLLECTION OF MINERALS.

The school of mines now has a collection of several hundred specimens of minerals found in the Territory. It is desired to make the collection representative of the entire mineralogy of New Mexico. Specimens for the cabinet will be received and acknowledged with thanks.

COURSE IN SURVEYING.

This course is outlined for the purpose of giving the young men of the Territory an opportunity to gain a fair knowledge of plane surveying and leveling, and to fit themselves for the duties of county surveyors, should opportunity so offer.

The value of knowing how to run a line of levels for ditch work in an arid country by bringing water from a distance and properly distribute it over a large ranch is a matter of no little consequence, and much work in this direction lies in the near future. The knowledge

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of properly restoring lost section and quarter-section corners, setting the blank half-mile corners on the north and west sides of townships, along the township and range lines, is a matter of much importance, and often confusing to the regular graduate in civil engineering.

Both the analytical and graphical methods are used in calculating irregular and angular tracts of land. Surveys are made by the magnetic needle, and on the limb of the instrument by front and back sights, and the possible and probable errors in both methods are thoroughly discussed.

Plane trigonometry.—Phillips and Strong's Elements of Trigonometry.

Surveying.—Johnson's Theory and Practice of Surveying (only certain portions of the text will be used).

Drawing and Platting of Surveys.—Field practice three hours each day.

This course can be completed during one semester (19 weeks) by any one of ordinary ability, if sufficiently prepared.

A surveyor's certificate is granted for the satisfactory completion of this course.

Hon. C. T. Brown, of Socorro, offers a gold medal to the student showing the greatest proficiency in assaying, chemistry, and metallurgy.

The outlook for the school of mines for the coming year is very bright indeed. Through the liberality of the last Territorial legislature the levy was increased as above stated, which increase in funds has enabled the trustees of the school to employ another professor, William C. Phalen, B. S., a product of the Massachusetts Institute of Technology, who will have direct charge of the departments of chemistry and geology. This increase, however, is not enough to derive the proper revenue for the support of the school as was the intention of its founders.

The erection of ore crushers, stamp mills, reduction, concentrating, cyaniding plants, etc., are necessities which should be added to the school as early as possible, in order that miners and prospectors may have their ore tested in ton lots so as to ascertain the most economic and satisfactory method to which the ore is adapted to treatment. This alone would save the people of the Territory thousands of dollars annually, as well as keep the money at home, which is going out into other States.

Few of our citizens are aware that the laboratory building ranks about fourth in size to any found on the Western Continent. It is to be noted that of the six technical students which attended school during the past session, that four were over 32 years of age, and one being 71 years of age. This latter gentleman no doubt would carry away the laurels over any other institution as regards age. The courses taught in the institution leading to a full degree are three in number, viz, (1) chemistry and metallurgy, (2) mining engineering, and (3) civil engineering.

These courses extend through a period of four years each. It is on the plane of applied sciences that theory and practice meet.

Indoor work is interspersed almost each day with outdoor exercises in geology, engineering, etc.

The examinations are very thorough and rigid. It is therefore impossible for any pupil to successfully pass on any subject without a thorough knowledge of the same before examination. Seventy-five per cent of the questions submitted are required to be answered correctly in order that a pupil be entitled to pass any particular subject.

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Since young women have recently been allowed the privilege to attend the school of mines a general course in science is contemplated, being created for the purpose of the young ladies having a parallel course extending through a period of four years, as in courses for young men leading to the degree of B. S. of general science. Should any young woman feel disposed to take any of the engineering courses, there is nothing to hinder her from doing it if she so elects. Two women have already taken special courses in assaying and chemistry, and we will have a young woman pupil the coming year who intends learning assaying, in order to aid her father who is a miner.

It can be truthfully said that the school of mines is accomplishing a great deal of good, and serves as a bureau of general mining information as well as performing its duties as a technical mining school.

The amount of inquiry regarding the mineral and mining industries by people from the East is growing to stupendous proportions. It is therefore the policy of the school in answering these numerous inquiries to give nothing but reliable data, as near as can be obtained. Within the last year the school of mines has approached nearer its true line of work as designated by its founders than it heretofore has ever been able to do.

The usefulness of the school in its special line of work is approved and recognized by every observing citizen as a factor of much good.

Since it is now possible for the school of mines to realize soon some of the benefits of the 50,000 acres of land donated by Congress, the people of the Territory are now practically assured of an institution of learning that will not only do credit to the Territory and reflect honor on her citizens, but will be one of the great centers where people from all over the country will come to seek and acquire technical knowledge and training emanating from the New Mexico School of Mines.

REPORT OF BOARD FOR THE ASYLUM FOR THE DEAF AND DUMB.

SANTA FE, N. MEX., *July 27, 1899.*

SIR: Complying with your official request of recent date, the board of trustees now in charge of the New Mexico Asylum for the Deaf and Dumb beg leave to report to your excellency the desired information regarding said institution.

Up to 1897 the deaf, dumb, and blind children of New Mexico had no opportunity to receive an education, no schools, private or public, having existed in the Territory prior to that time.

By an act (chapter 31) of our legislature approved February 24, 1887, a school for the education of the deaf and dumb children "resident in this Territory" was established. The school was opened with Lars M. Larson as superintendent (who has been employed in that capacity to the present time) and Miss B. E. Larson as matron or assistant teacher.

From that time to the present one to thirteen children per year, as Mr. Larson informs us, have received an education—five of these children were, in 1896–97, in the school as private pupils, the school having closed for want of funds. Mr. Larson was given authority to conduct a private school.

Although the school when established was made a Territorial school, it had not been declared a Territorial institution until the thirty-second legislative assembly of the Territory of New Mexico, by an act approved March 15, 1899, declared it so, naming it "Asylum for the Education of the Deaf and Dumb." This law created a board of five trustees for the management of the asylum. Prior to that time the school had been under the control of a committee composed of the attorney-general of the Territory, the auditor, and the treasurer of the Territory.

During the years of 1897, 1898, and 1899, four Indian pupils, two boys and two girls, have been receiving their education in the institution at the expense of the United States Government, the Government having paid for their education the sum of $1,748.17. This money was not turned over to the Territory, our predecessors having allowed Mr. Larson to keep it, the said Indian pupils having been admitted as private scholars.

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The law of 1887 provided that pupils not indigent should pay such amount as the committee should fix, and the Territory to pay for the indigent children. We can find no record or minute to show what was done with the money thus to be charged, nor what amount was collected, but Mr. Larson informs your board that something like $366 were by him collected from that source, and that said amount was retained by him under authority of the committee, as he claims, for board.

The present board was organized on the 10th day of April, 1899, the day fixed by the law of 1899, and elected Mrs. T. P. Gable as president and Benjamin M. Read secretary of the board.

We found the school was opened and was being conducted without funds, and at once ordered it closed on the last day of May, 1899, and to continue closed until the funds are available to pay off the debts incurred prior to our taking charge of the asylum, and to reopen as soon as we have money to conduct it on a cash basis.

We have ascertained, as near as we have been able to, from the official reports of the auditor of the Territory the exact financial condition of the institution, and find that, including the sum of $1,182.80 now due Mr. Larson, there has been paid out by the Territory the sum of $26,219.49 in purchasing land, building, and paying teachers' salaries from 1887 to May, 1899.

The real estate property of the asylum consists of one three-story brick building and a small addition, also of brick, and 4 or 5 acres of land. Only about from one-half to 1 acre of this land has been improved; it has a few fruit trees, and it lies immediately in front of the building.

The building and part of the land back of it cost (bought from Mr. Larson) the sum of $4.000, but the same was not completed at that time and the Territory had to expend a considerable amount to finish it. The small piece of land now improved was bought from Placida Sandoval for $75, making a total of $4,075, which is the amount paid for the real estate now owned by the asylum.

Of personal property, such as desks, maps, and all other school paraphernalia, dishes, beds, etc., the total value is about $500. In other words the asylum has in property, real and personal, the sum of $4,575. It also has a library of something like 250 volumes, but which did not cost the Territory a cent, the ladies of the board of trade of the city of Santa Fe having donated the same to the asylum some time ago.

Although our predecessors have constantly repaired the buildings, they are to-day far from meriting the name of a Territorial institution. The whole building needs repairs badly. In its present condition it is no credit to the Territory; poverty is apparent on every side.

We are at present hampered for want of funds as well as on account of the debt hanging over the institution, and see no prospect, as your excellency well knows, to open and to continue the good work of the asylum until next year, unless the money which is to be derived from the public lands shall come before that time.

Hoping to have satisfactorily complied with your request, and expecting your valuable aid in securing funds to put the asylum in repair and open the school soon, we remain,

Yours, very respectfully,

Mrs. T. P. GABLE,
President.
BENJAMIN M. READ,
Secretary.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

PRIVATE SCHOOLS.

SAN MIGUEL COLLEGE, SANTA FE.

This college, founded by the Christian Brothers in 1859, still holds its own as one of the leading institutions of learning in the Southwest. In the beginning the Brothers took quarters in rented buildings, but to-day they have their own buildings, which have cost nearly $50,000.

The college is unendowed and it has not received any share of the public funds. It has been self-supporting from its foundation.

One hundred and forty pupils have been enrolled during the present year.

The course of study consists of the English language, mathematics, commercial branches, phonography, typewriting, chemistry, assaying, and music.

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The college has a well-stocked cabinet of minerals and a good chemical laboratory.

The Christian Brothers also conduct the La Salle Institute, at Las Vegas, with an attendance of 110 scholars, and a school in Bernalillo with 100 scholars.

ACADEMY OF LORETTO.

The Academy of Our Lady of Light was founded by the Sisters of Loretto in 1853. The first sisters started from the mother house in Kentucky June 26, 1852, and arrived in Santa Fe the following October, accompanying the late Archbishop (then Bishop) Lamy, who had gone to the States to procure teachers for his extensive diocese. They were four in number, with Mother Magdalen Hayden as superior. They were unable to open school until January 1, 1853, having to acquire the Spanish language. As soon as this was accomplished they commenced to teach in the house which Bishop Lamy had given them opposite the cathedral. Here they remained until 1855, when they moved to the present site, it being a much more desirable location. The lot on which stands "La Casa Americana," so called because it was the first house with a shingle roof in Santa Fe, was given to the Sisters by Bishop Lamy, who always had the welfare of the school at heart. Here good adobe houses were built and the school began a prosperous career. Its good name spread and soon the house was filled with boarders, fifty being the greatest number. The present academy was finished in 1881, and cost about $24,000. It is furnished with modern improvements, gas, water, steam, etc., and is noted for its bright, sunny, well ventilated school rooms. The course of study includes the elementary and higher branches of an English education. Phonography, typewriting, painting, music, plain and ornamental needlework, etc., are likewise taught. The number of boarders is not so great as in former years, on account of the branch houses of the order, which are scattered throughout the Territory. The academy was incorporated in 1874.

They also have a select day school in connection with the boarding school. The total attendance this year is 80.

The historical old adobe building formerly occupied by the Sisters of Loretto has been torn down and in its place a beautiful three-story brick building has been erected at an expense of about $10,000.

In the city of Santa Fe an excellent private school has for some years been carried on by Miss Gulliford and her family, who are all skilled in scholastic work.

Miss Gulliford is a certificated teacher from the School of Art at South Kensington, London, England, her sister (an assistant in Miss Gulliford's school), having graduated at the Royal College of Music and the Guildhall School of Music, thus insuring the most approved methods of vocal and instrumental instruction.

Special attention is given in this school to modern languages, particularly German and French, and students of the ordinary curriculum are already proficient in colloquial French when completing the school course. Geography is studied as a science, embracing a practical knowledge of the products of various countries, the chief ports of shipment, and the shortest and most convenient routes of commercial transportation. Great importance is attached to correct English grammar and composition, and to the minutiæ of detail, which build up perfection of scholarship. Music, drawing, painting, and deportment are all carefully studied, and pupils pass out of this

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school thoroughly equipped for professional or commercial pursuits, and fitted also to discharge and adorn the duties and demands of domestic life.

INDIAN SCHOOLS.

The Indian industrial schools at Santa Fe and Albuquerque, supplemented by the several Government schools at the various pueblos, are all doing fine work. Nearly every Indian child in New Mexico is provided with the means of education, and the schools are very largely attended.

For many years it was difficult to obtain the consent of the Indian parents for the education of their children at these public institutions, as they had much hesitancy in permitting their children to leave home and go under the control of teachers. All this is now changed, and the parents are taking the greatest interest in the schools, in many instances showing an anxiety to have their children educated.

From present appearances, the majority of the Indian children of the Territory will be well educated in a few years, just as the other youths of the Territory are. The work being done in these institutions is such as to greatly improve the conditions of these wards of the Republic, and it will soon place them in a position to be self-supporting.

ALBUQUERQUE INDIAN SCHOOL.

The total enrollment of this school was as good as last year, being 320, and the average attendance 301, which is as large a population as can be healthfully accommodated with the present plant. A number of improvements have been made within the past two years, among which may be mentioned a new ring bath system for the pupils, the installation of electric lights, a new steel tank tower, the further development of our wells, whereby an abundance of pure water is obtained in place of the very bad water that we have had heretofore.

The paramount need of the school for years has been a sewer system, and Congress at its last session appropriated $14,000 for that purpose. When this system is complete the sanitary condition will be changed from poor to excellent. The health of the school has been good, no deaths having occurred for more than two years. The pupils have made commendable progress both in the school room and in the industries. Among our employees who are doing good work are a shoemaker, harnessmaker, assistant seamstress, and assistant cook, who have learned their trades here alone, and other pupils are nearing a state of efficiency that will enable them to assume similar responsibilities. The industries taught are cooking, laundering, carpentery, harnessmaking, shoemaking, tailoring, farming, and simple work in blacksmithing. A manual training department has been lately added to the institution and it promises to be an important factor in Indian education, as it is in the public schools of the larger cities of the country.

It is believed the Indian problem is somewhat nearer a solution than it was a few years ago, and while it is difficult to measure accomplishment by years, the effect of the total work done is plainly discernible.

SANTA FE INDUSTRIAL SCHOOL.

This school is located about 2 miles south of the city of Santa Fe on the Albuquerque road. It was opened in October, 1890, with a capacity of 150 pupils, and was created as an Indian normal school in January, 1894.

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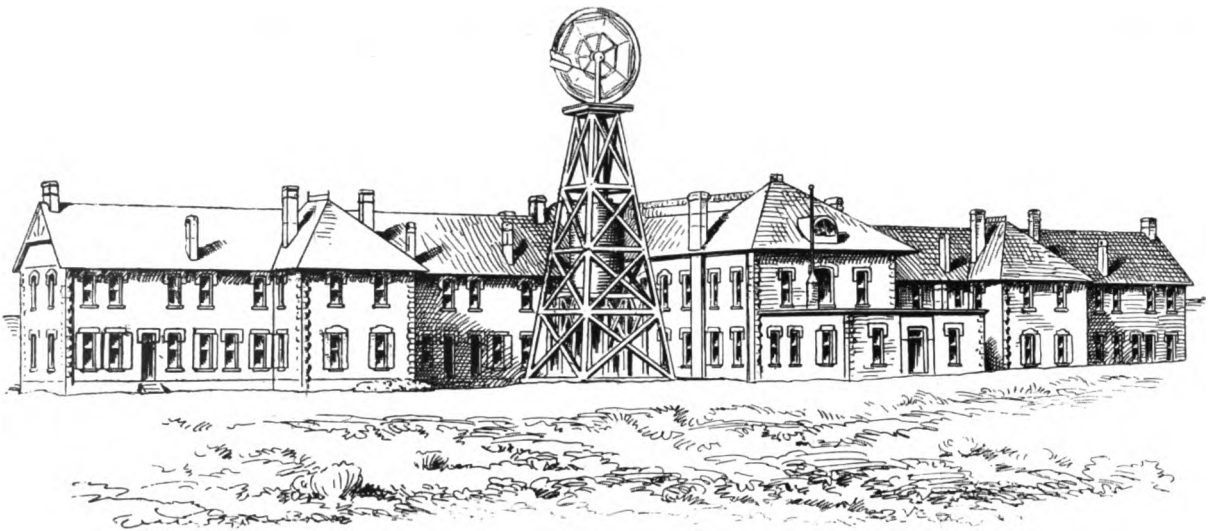

GOVERNMENT INDIAN SCHOOL, SANTA FE.

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The industries taught in this school are cooking, sewing, housekeeping, tailoring, shoemaking, blacksmithing, carpentering, laundering, and farming and gardening by irrigation. The farm consists of 160 acres, 10 acres consist of 5 acres of school campus and 5 acres of garden under irrigation.

The buildings are all of brick, well and substantially built, and lighted by electricity, and are named in order of size. Main school building in form of Greek cross; central building, 40 by 160 feet, two stories, each wing 40 by 140 feet, two stories. Employees' building, brick, two stories, with storeroom, kitchen, dining room, and fourteen employees' rooms, each with a large alcove; two bathrooms. Hospital, two stories, with ten rooms, dispensary, and bathrooms. Laundry, one story, three rooms and engine room, well equipped with steam washer, mangle, stationary tubs, centrifugal drier, etc. Shoe and tailor shop, two stories, four rooms. Tailor and 8 apprentices; shoemaker and 8 apprentices. Store, one story with basement. Blacksmith shop, one story, frame; capacity, 1 blacksmith and 6 apprentices. Carpenter shop, one story, frame; capacity, 1 carpenter and 6 apprentices. All necessary barns, sheds, hose house, oil room, hennery, etc.

Water supply, from the city waterworks, is abundant for all school needs and the irrigating of 10 acres. Sewerage ample and in good condition.

It is an acknowledged fact that the Pueblos and Navajos are among our most observant Indians. As a class they are the best reasoners among our Indian tribes. They are quick to detect shams and apt to see the good and bad qualities in men and things. They are more fully alive to the value of that which is good in white men's ways, and equally awake to the bad. They are more eager to adopt that part of our education in which they can see a commercial value than any Indian whom I ever met. They see almost instinctively the difference between a real mechanic and a pretense. They are willing to allow their children to remain a long time as apprentices, provided they can see that the instructor and appliances are of the best. And they do not seem to need any instruction to enable them to judge which is real and which is false.

In making my recommendations to the Indian Office I have had in mind the foregoing characteristics of the people with whom we must deal, and also the other, and perhaps more patent, fact, that our field is almost limitless. For instance, in the Santa Fe Agency alone are more than 1,000 Indian children of school age who have never been in a school of any kind. Among the Navajos (who are within our reach) are enough to fill three such schools as I ask for, and among the Utes within our reach are as many more. Besides this, our normal department extends to the entire Indian population of the United States, there being only three schools that make any pretense to a normal department, and these departments have just and equal claims upon all graduates of the various Indian schools.

In my recommendations I have asked that this school be raised in all departments to a real normal training trades school of a capacity of 600 pupils. I would not have the funds asked for expended slowly, but would that in a short time the school would be in full operation in all its branches, fully and generously equipped.

My estimates are made upon a very conservative basis, and to make the necessary improvements so as to put the school in working order with a population of 600 will require every dollar that I have asked

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for. Indeed, I have left not the slightest margin. I append herewith a recapitulation of my request:

For trades building	$15,000
For equipment of same	5,775
Addition to main building	2,600
Addition to warehouse	1,500
Addition to school building	6,600
New dormitory building	26,000
For heating plant	8,700
For water and sewerage	3,000
For repairs and improvements	3,000
Support of 300 pupils, at $167 per capita	50,100
Total	122,275

In the $15,000 "trades" building are to be taught the following branches: Blacksmithing, wagon making, painting, shoemaking, tailoring, tinning, plumbing, printing, sloyd, mechanical drawing, etc.

The equipment means two 80-horsepower boilers (to be used for steam heating and power), one 50-horsepower engine, and the necessary shafting and pulleys.

The "addition to the main building" is for modern bathrooms and water-closets; the "addition to school building" means four additional schoolrooms to the building now under construction; the "dormitory" explains itself; the "heating plant" is for piping and radiators within the buildings, and for the pipes from the boilers to the buildings. It is perhaps in order to call your attention to the fact that this school is already a regular normal school, having quite a class of young men and women from several different tribes, graduates of various Indian schools, who are preparing themselves for teachers in the service.

United States Indian Industrial School.

Number of schools	1
Number of months taught	12
Number of instructors	32
Enrollment	296
Total daily average	285
Total receipts	$50,050
Total expenditures	$50,050
Total value school property	$49,904
Total amount of salary paid to instructors	$17,680

COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

Origin.—The New Mexico College of Agriculture and Mechanic Arts, under a slightly different name, was established by the twenty-eighth legislative assembly of the Territory of New Mexico, by act approved February 28, 1889.

The purpose of this institution is clearly defined in section 19 of this act: "The agricultural college created and established by this act shall be nonsectarian in character and devoted to practical instruction in agriculture, mechanic arts, natural sciences connected therewith, as well as a thorough course of instruction in all branches of learning bearing upon agriculture and other industrial pursuits."

The branches in which instruction may be given are set forth as follows in section 20 of the same act: "The course of instruction of the college hereby created shall embrace the English language, literature, mathematics, philosophy, civil engineering, chemistry, animal and vegetable anatomy and physiology, the veterinary art, entomology, geology, political and rural household economy, horticulture, moral

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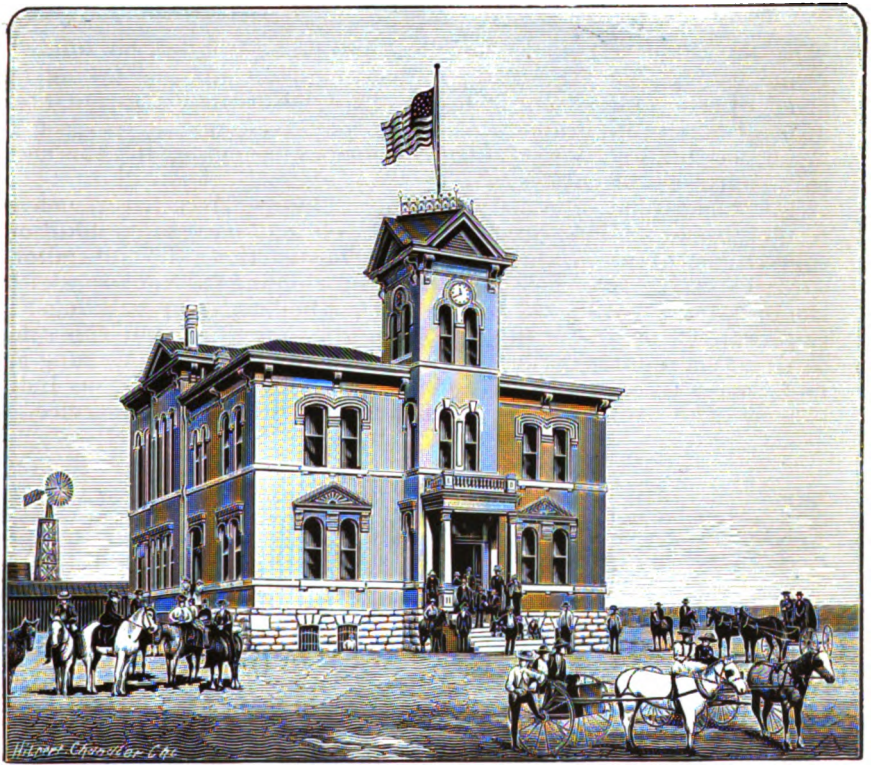

AGRICULTURAL COLLEGE, LAS CRUCES.

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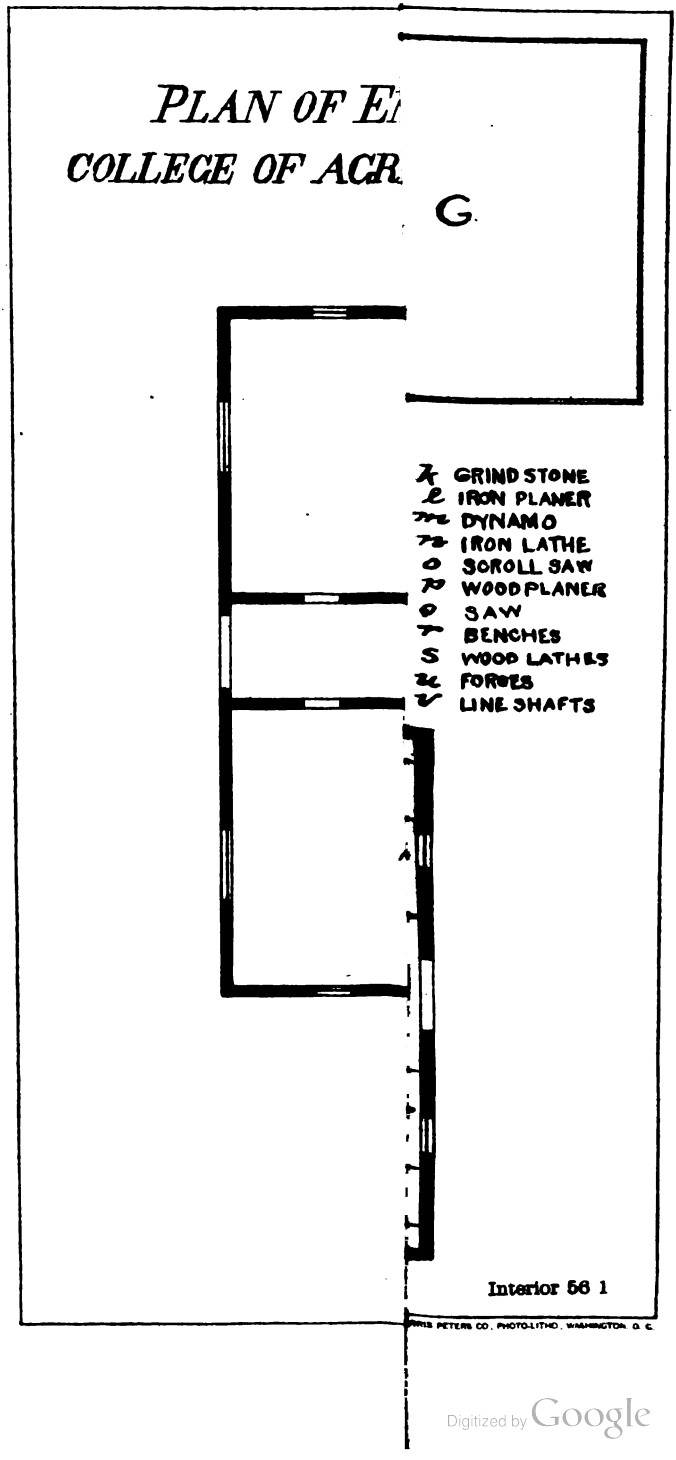

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philosophy, history, mechanics, and other sciences and courses of instruction as shall be prescribed by the regents of this institution of learning."

By section 25 of the same act the assent of the legislative assembly was given to the establishment of experiment stations within the Territory of New Mexico in connection with the agricultural college, in pursuance of the act of Congress approved March 2, 1887, known as the Hatch Act.

Income.—The revenues of this college are derived from the following sources: (1) Students' fees. (2) Sale of college farm products. (3) Territorial tax and special appropriation. (4) The United States under Congressional act of March 2, 1887, the Hatch fund. (5) The United States under Congressional act of August 30, 1890, the Morrill fund.

The money received from students and from the sale of products from the college farm has, so far, been very limited in amount, and has been used principally for paying expenses not provided for by either of the acts of Congress.

From the beginning the college has steadily grown in the number of students in attendance and in the confidence of the people, until last year there was a total enrollment of 215 pupils.

Four general courses are offered, namely, agricultural, mechanical engineering, civil engineering, and scientific, each of these being four years in length, leading up to the degree of bachelor of science. Besides these, there are shorter courses in bookkeeping and stenography and typewriting.

The laboratories are unusually well equipped, and are being added to continually. During the past year an electric dynamo and motor have been put in. Several additions have been made to the equipment in the chemical department, and the apparatus in the biological department has also been added to. A new building, called a station building, has been completed, and in it are located the chemical laboratories and lecture rooms, biological laboratory and lecture rooms for teaching anatomy and physiology, botanical laboratory rooms for the entomological department and the bookkeeping department. The building is an ornament to the place, and fills a long-felt need. A girls' dormitory was also completed during the year, and is now completely furnished and in use.

Many valuable experiments have been and are being carried on in the experiment station. Those relating to the cultivation and care of sugar beets have been especially satisfactory, and large numbers of farmers in different sections of the Territory have cooperated in this work, with the result that it has been practically demonstrated that New Mexico can grow as fine sugar beets, running as high in sugar content, as are grown anywhere in the world. The college invites the patronage and confidence of the people of New Mexico because of its large corps of efficient teachers, its well-equipped laboratories, its unsurpassed location, and the genial climate of the section in which it is built, which makes it the finest college of its kind in the entire Southwest.

DEPARTMENT OF ENGINEERING.

In the engineering course instruction is given by lectures, recitations, and practice work, so combined as to constitute a symmetrical course of study. The endeavor is to provide the student with a broad foundation of general and theoretical knowledge, together with a liberal amount of practice in the line of his chosen profession.

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After taking the elementary drawing and the bench work in wood, which are given by the department to all college students, those who elect engineering continue on advanced work in these subjects, and, in addition to the general studies in mathematics, physics, chemistry, English, language, Spanish, political economy, history and literature, their course includes descriptive geometry, theoretical and applied mechanics, hydraulics, engineering structures, metallurgy, electrical engineering, strength of materials, mechanism, machine design, steam engine and shop practice in carpentry, wood turning, blacksmithing and machine work, and a thesis for graduation. While the shop practice develops considerable ability in the student as a craftsman, yet, the educational features of this work are the most valuable and are constantly emphasized.

The laboratory is used to give the student an opportunity to put into practice the principles taught in the class and drafting room. An example of this method of teaching in all colleges of agriculture and mechanic arts may serve to explain the great difference between these colleges and those organized for literary and normal work.

After taking enough elementary free-hand and mechanical drawing to enable him to interpret such work, the student makes a correct drawing of some mechanical device, the drawing including the making of a tracing and blue print. He next goes into the wood room and constructs a pattern after the dimensions given in the drawing. Next in turn the pattern is molded in the foundry, and the casting is finished and the parts assembled in the machine room. At the same time, with this practice work, the student receives from text-books and lectures a thorough drill in mathematics, and their application in problems in hydraulics, roof and bridges, strength of materials, the generation and transmission of electric energy, specifications, etc.

The equipment of the engineering department consists of two buildings arranged for the work. One of these contains two large and well-lighted recitation rooms, a hall, a boiler room, machine room, and woodworking room. The second building contains room for forge and foundry work.

The motive power consists of a 40-horsepower steam plant and a 15-horsepower oil engine. The machinery is all of modern and improved design. It is expected that additions will be made to this equipment each year, as is done in all agricultural and mechanical colleges, and that the department will thus be enabled to offer to the student the most valuable preparation possible for his profession. The citizens of the Territory should give this engineering-laboratory feature their most substantial support, for the plant is a permanent one, growing more and more valuable each year, and giving additional educational training of increasing value to students in proportion to the extensiveness of the equipments. Gifts of machinery, drawings, photos of engineering work, or loans of these things to the engineering laboratory, will be of great value to the students, and will be appreciated by them.

An excellent department library, containing standard and special works on the subject pertaining to the engineering professions, is accessible to the students.

DEPARTMENT OF AGRICULTURE AND HORTICULTURE.

The work of this department is of a dual character, the more important work being, perhaps, the experiments conducted with a view to solving agricultural problems as presented in all parts of the State, though the work of instruction in agriculture and horticulture is of equal value, but more confined in its results. The principal lines of experiments now being worked upon are—

1. The testing of such varieties of grasses and forage plants as can be secured, that give promise of success in the dry, hot climate of New Mexico. While we have an extensive range in this Territory, there is a great lack of suitable pasturage for stock on the ranges and ranches. A summer pasture for cattle is especially needed. Annual grasses, such as the millets, nonsaccharine sorghums, Kaffir and Jerusalem corn, and several varieties of perennial grasses are now under trial. As far as possible, preliminary experiments in the feeding of these crops are being made, but such work can not be satisfactorily done until the college owns its own live stock.

2. Experiments in soil tillage and water management are receiving much attention. In this work the department of soil physics cooperates. The problem to be solved has many phases, and is one of the most important in New Mexico agriculture. It involves the measurement of all water applied to the land, the determination of the moisture content of the soil, the influence of tillage on soil moisture, and kindred subjects. The ultimate object is to determine the least amount of irrigation necessary to secure the highest crop returns. Investigations of this character are cumulative in value, and must necessarily be prolonged over a series

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of years. Hay, grain, and orchard crops are being employed in this study, and already interesting and valuable data have been secured. The principal indication noted in the study of an irrigated corn crop is that a deep, loose soil—a condition secured by subsoiling to a depth of 15 to 18 inches—permits the absorption of much more water at each irrigation than is possible in shallow-tilled land, and insures a much more vigorous growth, and, consequently, a better crop.

3. Orchard studies: In the experiment orchard of the college there has been continued this year an experiment begun last year for the destruction of the codling moth. All of the fruit in the orchard was destroyed while very young last year to see if the absence of a food supply would result in the destruction of the pest. During the present season the trees were banded just after the fall of the bloom, and weekly examinations have been made for moths. Compared with other orchards in which the fruit was not destroyed, the college orchard is remarkably free from the codling moth, though not entirely exempt. An experiment in the pruning of the peach is also under way, and studies of the fruiting season, yield, etc., of many varieties of orchard fruits are being made.

4. Feeding experiments with cattle and sheep are planned, and it is hoped may be begun next year. Preliminary to this, an effort has been made this season, both at the college and the substations, to increase the list of possible crops that can be used in stock feeding in New Mexico. It is believed that with alfalfa as a basis a sufficiently varied diet can be provided to yield best results, while the mild climate should aid in making the winter feeding of range stock a profitable industry for the valley ranchmen.

On a smaller scale, experiments and observations with garden crops, ornamental plants, and forest-tree plantations are being conducted. During the year a weekly press bulletin has been sent to the newspapers of the State, and has been very largely used by them. The subjects discussed have been timely and practical, and the bulletin has resulted in an enlarged correspondence for the department coming under this heading, thus proving the interest of the public in the work.

The substations at Roswell, Las Vegas, and Aztec, supported by Territorial appropriations, are designed to aid the home station by undertaking problems of a more local nature. Late in the season they were placed in the care of this department, and while a lack of time prevented the planning of entirely satisfactory work for the present season, it is believed that these substations can be made a source of great value to the communities in which they are located. The great question of the increase of alkali by seepage water will be studied at the Pecos Valley station, and the Aztec station will be largely devoted to experiments with fruit during the immediate future.

The equipment of the department has been materially increased during the year and the prospects for its increased usefulness are bright.

DEPARTMENT OF POLITICAL AND ECONOMIC SCIENCE.

Political economy.—During the year 1899–1900 one course will be given on this subject—an exposition of the general principles of economics. Davenport's Outlines of Economic Theory will be the handbook used, and the subject will be developed in the main by means of assigned readings and oral discussions. Collateral reading on special topics will be assigned to the several members of the class, upon which they will be required to report.

Political science.—Two courses in political science will be given in which the same general method will be followed as in the course in political economy—assigned readings, recitations, and discussions, oral and written, by the class as a whole; and collateral reading, oral and written reports upon special topics, by the members, severally. In the first course—a comparative study of the development of government—Woodrow Wilson's The State will be used as a text-book. In the second course, constitutional law in the United States, Cooley's General Principles of Constitutional Law will probably be retained as a guide book.

DEPARTMENT OF ELOCUTION AND PHYSICAL CULTURE.

Four years ago the department of elocution and physical culture was introduced into the college. Since that time systematic instruction has been given in tone and voice work, articulation, emphasis, inflection, and gesture. All college students are required to take the work, and public recitations by the various students in each class are given yearly.

The class in physical culture, which comprises all of the young ladies of the college, meets every morning at recess in the McFie Hall. Visitors have found it a pleasing sight to watch the fifty or sixty young ladies keeping time to the music

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as they go through the graceful movements of the Delsarte drill or the varied changes of the wand and dumb-bell exercises. Instruction is also given in free gymnastics and the Swedish system. Several pleasing entertainments have been given under the direction of the instructor in charge of this department.

DEPARTMENT OF BOTANY, IN CHARGE OF GEOLOGY AND PHYSICS.

College work.—This department has under its charge the work in botany, geology, and physics. The work in each subject occupies the whole year of time, botany having the equivalent of six hours and the others five hours each week.

The method of teaching these subjects pursued is as much the laboratory method as facilities will permit, and it is possible to follow this method almost entirely in the subject of botany.

Students in this subject are supplied with good compound microscopes and all the other necessaries for making a careful microscopic examination of different kinds of vegetable structures. Besides the laboratory work a text-book is used as a guide, and both are supplemented by lectures.

The work in physics consists of lectures with assigned text-book reading and demonstration experiments performed by the teacher and assistant in class. Strictly laboratory physical measurements, except of the simplest kinds, are not possible for want of the necessary apparatus, but it is expected that much of this will be added in the near future.

The work in geology comprises a term in mineralogy and lithology, a term in dynamical and structural geology, and one in historical geology and paleontology. A rather large assortment of minerals is placed in the hands of the students for study and some work in determinative mineralogy is attempted. A small collection of fossils is used in the work in paleontology.

The department has excellent quarters for botanical work in the new science hall, and the work in geology is temporarily placed in one of these rooms until it shall be possible to arrange suitable accommodations for a museum. The physical laboratory, in the engineering building, furnishes good accommodations for this work and will be much better when it is thoroughly equipped for students' laboratory work.

Experiment-station work.—On account of the large amount of teaching in charge of this department not a very great deal of experimental work has been done the past year. A study of the flora is being carried on with the ultimate purpose of publication of a manual of the flora of the Territory, and to this end plants are being collected at all times and preserved in the college herbarium. This herbarium is now of some size and is fairly representative of the flora of the Territory, besides containing some other plants received from different parts of the United States. Some studies of the distribution of plants have been made with the design of making a life-zone map of the Territory.

The summer of 1899 has been spent in the field in the Sacramento Mountains, making collections of plants in localities never before visited by a botanist. The season's trip has yielded between 3,000 and 4,000 specimens of dried plants, of which it is believed that several are new.

The head of this department is particularly anxious to become acquainted with the various investigators in the botanical field of this Territory and offers his services for the identification of plants and the answering of general questions relative to this subject.

DIVISION OF SOIL AND IRRIGATION INVESTIGATION.

This department is cooperating with the Division of Soils and of Irrigation Investigations of the United States Department of Agriculture. The following lines of work are now under way:

First. Measuring the amount of water applied to the experiment-station orchard and to 30 acres of alfalfa near Las Cruces.

Second. A piece of ground on the experimental station farm of about 4 acres was divided into twelve plats and these planted to corn, which has been subjected to different amounts of cultivation. Three of the plats were subsoiled. The soil of each plat has been carefully examined as to its physical characters. In each of these plats were installed two sets of electrodes for determining the amount of moisture in the soil by the electrical method—one at 6 to 9 inches, the other at 21 to 24 inches. Soon after the corn was planted it became impossible to irrigate these plats, and we have therefore gotten some interesting figures on the per cent of moisture in the soil during drought and of the effects of definite quantities of rainfall on soil moisture. We have also learned something of the effect of dust mulch on conserving the soil moisture.

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The work for this season will not yield results that can be considered at all conclusive; in fact, the experiments will have to be repeated through a number of years. We hope finally to be able to state with some accuracy the per cent of moisture necessary for the growth of crops and the number of acre-feet of water required to give that necessary moisture.

A month during the summer of 1899 was spent with Messrs. Means and Gardner, of the Division of Soils of the United States Department of Agriculture, in the vicinity of Roswell, studying the soils, alkali, and seepage water. We found the lowland soils there getting into very bad shape from the use of too much water and the leakage from the ditches. The water table had been raised much too near the surface of the soil, and this had caused the accumulation of "alkali" in the surface of the soil to such an extent as to be quite injurious to plant growth. We were able to suggest a remedy for the conditions, which bids fair to relieve the trouble. The lands will have to be thoroughly drained and then flooded during the winter months, and the water will have to be applied judiciously to the growing crops.

Determinations of soil moisture are also being made at the Las Vegas and San Juan substations. We hope that the experience gained this season will enable us to carry out the experiments along these lines on a much larger scale next season. It is exceedingly important that we should know how many acre-feet of water are needed for the different types of soils and different localities of the Territory in order to use economically any water supply that may be made available. It is also very important that we know the characters of the soils of the Territory in order that we may guard against subirrigation and the "alkali" which usually accompanies it.

There are certain localities where irrigation will never be a success without drainage, while in others there seems to be very little need to fear subirrigation, at least so long as irrigation is confined to the lowlands. It is possible that, in all cases where large quantities of water are applied on the mesa lands, there is danger of subirrigating the lowlands.

DEPARTMENT OF SPANISH.

Spanish is optional with Latin in all the courses throughout the freshman and sophomore years; and in the junior year in the scientific course it is optional with higher mathematics and English literature.

Situated, as this college is, near the border of the Republic of Mexico, with Spanish in common use among the majority of our people, the greater number of pupils prefer Spanish to Latin.

For the year ending June 2, 1899, the number of students that studied Spanish was 44; and it is with pleasure that I am able to state that they took an unusual interest in the work.

There exists a strong and growing demand for Spanish-speaking stenographers, and the calls upon this college for competent Spanish and English stenographers during the past year have far exceeded the supply. The work in Spanish is of such a character as to fit the student for commercial work, and a considerable amount of Spanish dictation is given.

In connection with my four Spanish classes I had charge of a class of Spanish-speaking pupils to whom I taught English.

SCHOOL OF STENOGRAPHY AND TYPEWRITING.

In this department provision is made for the thorough and complete training of stenographers and typewriters. The course provided is one year in length, and it is such as to give the student thorough and complete work in those branches best fitted for his needs. The department is well equipped with Remington and Smith Premier typewriters and other facilities, and the training is thorough in every respect.

A special feature of this department, and one which is unique among educational institutions of the country, is the provision made for the training of stenographers in both English and Spanish. This particular feature of the course has been given some attention for several years. The demands made upon this department for competent stenographers in both Spanish and English have been much greater than it has been possible to supply. It is a creditable record for the department that of the many young men and young women who have left this work during the past five years to take active positions not one has been found unable to meet all the requirements expected of him.

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DEPARTMENT OF MATHEMATICS AND ASTRONOMY.

Changes in the courses of studies have been made in the various departments of instruction nearly every year in the history of the college. While changes do not always signify growth, still the courses of study have been greatly improved and strengthened. This department will no doubt be greatly benefited by two important changes this year, the raising of the requirements for admission to the freshman class and the lengthening of the recitation period from forty-five minutes to one hour for all college classes. Algebra through logarithms is the mathematical requirement for admission to the freshman class this year, while for several years past the subject had to be completed through quadratics only. More time also is allotted to the above amount of work than has been given heretofore.

All freshmen pursue the study of plane and solid geometry daily during the first and second terms, and four days each week during the third term. Before Book I is completed students have practice in solving "original" propositions; and this work is continued throughout the year, requiring at least one-third of the time that is devoted to the study of geometry. The students take pleasure in demonstrating original theorems and in solving original problems, for this is a test of their mastery of the subject.

Trigonometry is taught daily during the first term of the sophomore year. While the greater portion of the time is devoted to the study of plane trigonometry, still the student is able to get a fairly good knowledge of spherical trigonometry.

Higher algebra is taught one hour per week in the third term of the freshman year, and two hours per week in the third term of the sophomore year.

Analytic geometry is taught three hours per week in the third term of the sophomore year, and four hours per week in the first term of the junior year. The work covers not only plane analytic geometry, but also a considerable amount of geometry of three dimensions.

Calculus is taught daily during the second and third terms of the junior year.

All engineering students are required to complete the mathematics as outlined above. All scientific and agricultural students are required to complete the mathematics as far as the end of the second term of the sophomore year. The scientific students may then continue the work as an elective if they desire to do so.

Astronomy is taught five hours per week in the first term of the senior year, four hours per week in the second term, and one hour per week in the third term. This is a required study for all seniors except those in the mechanical engineering course. The class meets for night observations at least once every two weeks throughout the year.

This department has for the use of students a portable equatorial telescope with 4¼-inch objective and magnifying powers ranging from 100 to 400, a surveyor's transit with solar attachment, star lantern with slides, planisphere, star atlas, field glasses, and a 24-inch slated globe.

DEPARTMENT OF HISTORY AND PEDAGOGY.

The purposes aimed at in teaching history are (1) to give an idea of the great lines of historical development, (2) to discover the ideas which organize historical movements, (3) to stimulate self-directed investigation, (4) to train the judgment in the discrimination of motives and the results of action, and (5) to inspire the student with a desire to be something more and better than a passive observer in the progress of humanity.

The work embraces the following:

General history.—This subject, although required for admission to the freshman class, is taught by the professor of history. It is pursued through the subfreshman year four hours per week. In the limited time allotted, constant effort is made (1) to give the student a large number of important individual facts or events, great care being taken not to burden the memory with unimportant ones; (2) from these to group as many related ones as possible, and thus to connect causes and results of leading historic movements.

History of education.—During the third term of the sophomore year students in the course in pedagogy pursue this subject five hours per week. From a new point of view, this affords a valuable review of many topics passed over in general history, and it is also a fitting introduction to the work in pedagogy, of which it forms a part.

History of civilization.—During the last term of the senior year, five hours per week, students in the course in agriculture, and those of the scientific course who have not elected pedagogy, will pursue this subject.

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Pedaggoy.—It is not the intention of the board of regents and the faculty to give this subject great prominence at present. But experience has shown that many of the students of this college engage in teaching to a greater or less extent. It is believed that it is due to these and to the common schools of the Territory, that opportunity should be afforded for obtaining an introduction to the theory and the practice of teaching. To this end, the following elective and substitute work is offered to students of the scientific course.

Elementary psychology.—During the first term of the junior year five hours per week will be devoted to this subject. Disregarding the many fine discriminations properly pertaining to more advanced work, an attempt will be made to make the student familiar with such a popular understanding of mental phenomena as is essential to a study of pedagogy as a science. On the physiological side he will have had ample training in the zoological laboratories.

Arithmetic.—During the third term of the sophomore year, four hours per week, this subject will be thoroughly reviewed from the standpoint of a teacher. Students will not only become very familiar with the subject-matter, but every recitation will be so conducted as to illustrate philosophical method. Students will also be given practice in conducting recitations in this subject.

Language and geography.—During the second term of the junior year five hours per week, in connection with the reading of essential portions of McMury's Method of the Recitation, students will have a training in these subjects, or portions of them, similar to that outlined for arithmetic above.

School management, school law, and practice teaching.—During the third term of the junior year, five hours per week, the time will be divided among these topics in such proportion and in such manner as best judgment may dictate at the time.

General remark.—This course is not intended as a rival to courses given in professional normal schools. So much is introduced to meet partially a pressing demand. Yet, when we take into account the liberal amount of academic training contained in it, especially the scientific training gained through the use of ample equipment in the way of laboratories of various kinds, it is believed that the graduate may enter upon the work of teaching with a reasonable degree of assurance of success.

DEPARTMENT OF ENGLISH AND LATIN.

English.—English is taught throughout the entire collegiate course. The work consists chiefly of theme writing, supplemented by some rhetorical analysis and a careful study of a few English classics. All college students write at least one composition a week.

In the junior year an elective course in English literature is offered. The works read during the current year are two of Shakespeare's plays, Homer's Iliad and Odyssey in a translated form, and Tennyson's Idylls of the King.

Latin.—Latin is taught as an elective during the freshman and sophomore years. Special attention is given to the points of relation, etymological and grammatical, between the English language and the Latin; also to questions of classical mythology and Roman history.

Equipment.—In the department library will be found Smith's Dictionary of Classical Antiquities and Dictionary of Greek and Roman Mythology and Biography, the English dictionaries of Webster and Worcester, and several other books of reference of value to the language student.

DEPARTMENT OF CHEMISTRY.

The work of the chemical department, like that of several other departments of the institution, is divided into two parts—one relating to the instruction of students, and the other to the agricultural experiment station connected with the institution.

The chemical department has been making a steady growth during the short time the college has been in existence. Starting in very poorly arranged and cramped quarters, since moving into the new science building not only the room but the equipment as well has been very materially increased. The equipment of the chemical department is modern and first-class in every particular, and will compare favorably with that of many older institutions. It is not at all necessary for students to leave the Territory to find first-class facilities for instruction in chemistry.

The courses in chemistry and assaying given to students are intended not only as cultural studies of the general college course, but are designed to have a practical application as well. While the institution is comparatively young as yet, it is nevertheless a fact that a number of young men who have taken work in the chemical department are at present holding responsible positions in connection with mining work in Mexico and elsewhere.

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In the chemical laboratory of the experiment station a number of investigations have been carried on that are thought to be of practical value to the Territory. For example, for the past two seasons a study has been made of a number of sections of the Territory in regard to their adaptability to sugar-beet production. As a result of this work, it has been demonstrated that a number of places in the Territory, especially in the northern portion, can produce remarkably high-grade beets, both as to sugar content and purity. A number of people in the Territory have been very much interested in this work, and attempts are being made, in one or two instances with apparently a fair degree of success, to interest capital in the matter and secure the erection of additional sugar factories in the Territory. The principal results that we have secured in the sugar-beet work are to be found in bulletins 26 and 29, which, as well as other bulletins of the station, may be had free upon application.

Bulletins have also been published from this department concerning "The Value of Rio Grande Water for the Purpose of Irrigation," "Alkali in the Rio Grande and Animas Valleys," and "Principles of Stock Feeding and Some New Mexico Feeding Stuffs."

In 1895–1897 investigations were carried on in cooperation with the United States Department of Agriculture, Office of Experiment Stations, concerning the food of our native people, and the composition of our native range cattle. The results of these investigations were published as Bulletins No. 40 and 54 of the United States Department of Agriculture, Office of Experiment Stations. We are also at present cooperating with the Department in the irrigation investigation work, in a study of the composition of the Rio Grande and Pecos river waters.

Besides the above a considerable amount of original research work has been done in this department on methods of analysis of soils, feeding stuffs, etc. Several of these methods have been adopted as official methods by the Association of Official Agricultural Chemists.

DEPARTMENT OF ENTOMOLOGY.

The principal subject studied in the entomological department for some years has been Coccidæ, or the family of scale insects. These insects, though mostly minute and inconspicuous, are very destructive to fruit trees and ornamental plants, and it has become necessary for economic entomologists to give them serious attention. Inasmuch as different kinds are being continually introduced into the United States from abroad, we have had to include in our studies the Coccidæ of the whole world, so far as material could be obtained. The collection of these insects in the college is the most complete in the United States, with the exception of the national collection at Washington, and in it are included the type specimens of a great many new species.

The entomologist has also been much occupied with an investigation of the geographical distribution of the different insects throughout the Territory, with a view to the elucidation of the life zones. It has become apparent in the course of these studies that the life zones of New Mexico are far from being well understood, and while a large mass of data has been accumulated, the work accomplished is small in comparison with that which remains to be done. During the year 1898–99 Prof. C. H. T. Townsend was in charge of this work, and he obtained a large and valuable collection in the Sierra Blanca region, which still awaits study.

The codling moth, so destructive to the apple crop, has been carefully studied, with the result of showing the extreme difficulty by any ordinary means of preventing its ravages. It has several generations during the year in the Mesilla Valley, and thus is able to increase to such an extent that neither spraying nor banding seems to protect the late apples.

The wild bees of New Mexico have been studied for a number of years, and tables for their determination have lately been published. In teaching entomology it was found that there existed no manual or any group of New Mexico insects that could be used by the students, and so it was planned to work up the bees with such a manual in view. The subject proved more interesting and complicated than was expected; several of the genera, and great numbers of the species—over 100 in the Mesilla Valley alone—being undescribed. It has resulted from these and other investigations that the entomologist has published a large number of papers on the natural history of New Mexico, besides the bulletins of the Experiment Station, treating principally of life zones and the codling moth. Papers have appeared in the proceedings of the Philadelphia Academy of Sciences, transactions of the American Entomological Society, bulletins of the scientific laboratories of Denison University, bulletin of the Illinois State Laboratory of Natural History, transactions of the Kansas Academy of Science, Annals and

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Magazine of Natural History, American Naturalist, Canadian Entomologist, Entomological News, Psyche Botanical Gazette, etc.

The undergraduate classes in entomology in the college have always been small, and from the nature of the conditions, particularly the lack of time, somewhat unsatisfactory. Better work has been done by senior students preparing theses, taking special subjects, such as the bees of New Mexico, the life of the sand hills, the codling moth, the dacylopinæ, etc. Considerable time has also been given to assisting original research, but with one exception the students have been residents outside of New Mexico, and it has been necessary to correspond through the mails. It is expected in the future that more research students will find their way to the college, and it is hoped that their presence, while not increasing the expenditure to any noticeable extent, will prove beneficial to the institution. During the summer of 1899 the entomologist has conducted the New Mexico biological station at Las Vegas, in cooperation with the normal university, but this station is not at present officially connected with the college.

NEW MEXICO NORMAL UNIVERSITY.

By an act of the Territorial legislature of 1893, the New Mexico Normal School at Las Vegas was created. The proceeds of the special tax levied at that time for the erection of a building, with the addition of $10,000 appropriated by the legislature in 1895, and the sum of $19,700 advanced by the citizens of Las Vegas in 1898, were applied to the erection and equipment of the beautiful brown sandstone building now occupied by the school.

Building.—This building is of the Romanesque style of architecture and is a genuine work of art. It is situated on an eminence in the center of the city of Las Vegas, easy of access from all directions, and surrounded by perfect sanitary conditions. It is heated by steam, perfectly lighted and ventilated, furnished with electric lights, and supplied with mountain water from the Agua Pura Waterworks. The total cost of the building will be about $50,000. It is unquestionably the finest public building in New Mexico and perfectly adapted to the purposes for which it was designed.

Location.—The city of Las Vegas has a population of about 10,000. It is the leading commercial center of New Mexico. It is a thriving business place, situated at the eastern base of the Rocky Mountains, at an elevation of 6,398 feet. The foothills rise from the western side of the city. Only 6 miles away are the famous Las Vegas Hot Springs, and an hour's drive brings one into some of the most beautiful of mountain canyons.

Of all the school and residence towns of the Rocky Mountain region Las Vegas undoubtedly affords the most favorable conditions. As a place for study all the year around it could not be excelled. The winters are mild and pleasant, zero days and cloudy days being rare. The summers are almost perfect. The nights are always cool and the heat of the day rarely touches 90 degrees.

Las Vegas is on the main line of the Atchison, Topeka and Santa Fe Railroad. It is twelve hours by rail from Denver, fifteen hours from El Paso, thirty-nine hours from Chicago, and forty-two hours from Los Angeles. The best of train service makes it easy of access from all directions.

Museum.—Ample room has been set aside for this purpose and every friend of the school is earnestly requested to contribute to this department. New Mexico is rich in geological, botanical, and zoological material, as are all of the Rocky Mountain States; but in the first line of prehistoric interest it stands alone, the richest field on the continent. Large collections are annually leaving the Territory to be placed in Eastern institutions. If centered in New Mexico, these would

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soon make one of the finest museums of anthropology in existence. The museum of ornithology already comprises 500 specimens.

Sessions.—The institution never closes. It is felt by the management that after the State has invested large sums of money in a public institution it should not be closed and yielding no return during any part of the year. Accordingly, continuous sessions are held and students may at all times find profitable courses in instruction in progress.

Moral and spiritual influence.—The school is absolutely free from denominational or sectarian influence. The school accepts the almost universal theory that the chief end of all education is moral character. Accordingly, the character-building aim is kept continually in view.

A high moral sense and a spiritual nature that is fully developed are essential to the teacher to inspire youth to attain higher and nobler lives.

Government.—All government exists for the good of the governed. This conception of government is put into execution in the school. The aim is to develop in pupils the power of self-control, through which the individual comes into perfect obedience to the laws of man and God. The idea is to render discipline unnecessary.

A monthly publication, called the Southwest, devoted to the educational interests of New Mexico and edited by the students of this institution, has already taken a worthy place in school journalism.

Expenses.—Board in private families, $20 to $25 per month. Self-boarding has been conducted by a number of students during the past year at $10 per month.

Fees are as follows: Normal school, $5 for a term of three months; graduate school, $5 for a term of three months; academic school, $5 for a term of three months; manual training school, $5 for a term of three months; commercial school, $15 for a term of three months.

Literary societies.—Two literary societies are in operation, the Delphian, for young women, and the Olympian, for young men. All students are expected to do literary work throughout the course. The reading, elocutionary, oratorical, and dramatic work will all be prepared under the direction and training of a critic. Joint open meetings are given each term, and an annual contest will be held. To cultivate the power of the voice and attain ease and power in public speaking are the aims of the literary societies.

Gymnasium.—Systematic gymnasium work will be given through the year, and field athletics under careful training will be a permanent feature. The athletic interests are under the general supervision of the physical directors of the athletic association. All exercises that furnish wholesome and enjoyable physical recreation will be cultivated. An annual field day, with contests, will be held. A well-equipped gymnasium is in process of development, and it is hoped that a permanent athletic field may be secured during the coming year.

Library.—The library has come to be an indispensable department of an educational institution. It is a constant source of inspiration and culture to both student and faculty. Each department is furnished with its own special library, and the general reading room is being supplied as rapidly as funds will permit. It contains the best reference books, history, biology, science, poetry, fiction, psychology, and philosophy, a good supply of current magazines, and nearly all of the Territorial magazines and newspapers are kept on file through the courtesy of the proprietors.

Business correspondence.—A very large amount of business correspondence is done by the student during his course, in which he learns

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model forms of business letters of every kind. Shorthand, commercial arithmetic, penmanship, and rapid calculation, commercial law, and other branches are taught thoroughly. Altogether, this university is a credit to New Mexico, as it would be to any of the Eastern States. The faculty consists of teachers well trained for their work, and this school is rapidly forging to the front as one of the finest higher educational institutions to be found anywhere, and it is only a matter of a short time when it will be known, by the work it has accomplished, as one of the best educational institutions in the West.

NEW MEXICO NORMAL SCHOOL AT SILVER CITY.

The normal school of New Mexico, located at Silver City, designed to furnish the Commonwealth with competent teachers, was established by act of the Territorial legislature of 1893. In obedience to this act, its organization was perfected the following year by the election of a competent faculty and the adoption of a suitable course of study. While the permanent building was in process of construction, temporary quarters were secured for the accommodation of students. The new edifice, a structure well suited for school purposes and supplied with modern appliances, was dedicated with appropriate ceremonies in October, 1896. The third story has been completed.

This normal school has just completed the fifth year of its existence, with brighter prospects than any before since its creation. Its growth along all lines has been steady and substantial. In numbers, in organization, and in popularity with its patrons it has achieved all that is reasonable to expect from so young an institution.

Since making our last report the board of regents has, as above stated, completed the third story of the normal building, and has seated the assembly hall with opera chairs, and made such other improvements as their finances would permit. From funds arising from entertainments and other incidental sources considerable apparatus has been purchased and the number of books in the library greatly increased.

The number enrolled during the year 1899 was seventy-nine, and the average daily attendance of the current year indicates an increase over that of the last. The number graduated at the June commencement was seven, all of which were from the professional department.

To show that the normal has been fulfilling the purpose for which it was created, we call attention to the occupations of its alumni. Four classes, numbering twenty-five in all, have been graduated. Of these, three young ladies have married; four are students in higher institutions; fifteen are engaged in the teaching profession, and three are engaged in other occupations.

The financial aid received from the tax levy is, doubtless, the same as that of the other institutions, with the exception of the university located at Albuquerque. This has been most judiciously expended for teachers' wages and incidental expenses. That the amount received is not sufficient to maintain a school of the highest character is generally understood, and that this amount is inadequate to meet the expenses is best known only by those who administer its affairs. As an institution grows it should receive an amount commensurate with its development. Owing to the competency of the teaching force of the normal, however, we are doing a work equal to that of any other institution of a similar character in the West; hence we earnestly hope that the coming session of the legislature will deal with us as we merit.

The school maintains three departments of instruction: (1) Professional, (2) academic, and (3) business. The first entitles the graduate

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to a life certificate to teach in the public schools of New Mexico. The second comprehends those studies embraced in the term "secondary education." The third aims to fit the student to meet the demands of actual business life. The friendly relations established between the city schools and the normal has led to such an articulation as makes each mutually helpful, the former serving the purposes of a training school for the artisan teacher. The term begins September 1 and continues forty weeks.

It is the established policy of the board of regents to conform strictly to the law, administer duties in conformity to business principles, and exercise the strictest economy consistent with the demands of the school. The school needs increased funds for its maintainance and a dormitory for the accommodation of its students. We labor under the belief that the people of the Territory will recognize the merits of the normal school and the place it occupies in our educational system, and will supply its needs. This school has done remarkably good work, and with increased funds would be in a position to do much more in the future.

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., August 10, 1899.

SIR: I have the honor to submit the following report of the operations of this office for the fiscal year ending June 30, 1899:

PUEBLOS.

Population.—A partial census taken at the close of the fiscal year is transmitted herewith. It was found impossible to take a census at Acoma, Pahuate, San Felipe, San Ildefonso, Santa Ana, Santo Domingo, Tesuque, or Zuni, and the census obtained from Isleta was incomplete. However, I succeeded in obtaining statistics showing population of all pueblos except Santa Ana, at which place there is no Government employee, and it was found impossible to secure the desired information without incurring expense.

The statistics called for in office letter of June 17, 1899, are as follows:

Number of males above 18 years of age	2,498
Number of females above 14 years of age	2,325
Number of school children between the ages of 6 and 16	2,112
Number of school children attending school	1,102
Number of school children not attending school	1,010

While these statistics are in several cases estimates, they will be found approximately correct.

The population by pueblos is as follows:

Acoma (including Acomita)	1,376
Cochiti	355
Isleta	1,000
Jemez	456
Laguna (Laguna proper)	292
Pahuate (subpueblo of Laguna)	375
Paraje, Casa Blanca, and Santana (subpueblos of Laguna)	183
Nambe	98
Picuris	96
Sandia	77
San Felipe	650
San Ildefonso	150
San Juan	378
Santa Ana	300
Santa Clara	248
Santo Domingo	1,015
Taos	402
Tesuque	84
Zia	104
Zuni (including Ojo Caliente, Nutria, and Poscado)	1,422
Total	8,961

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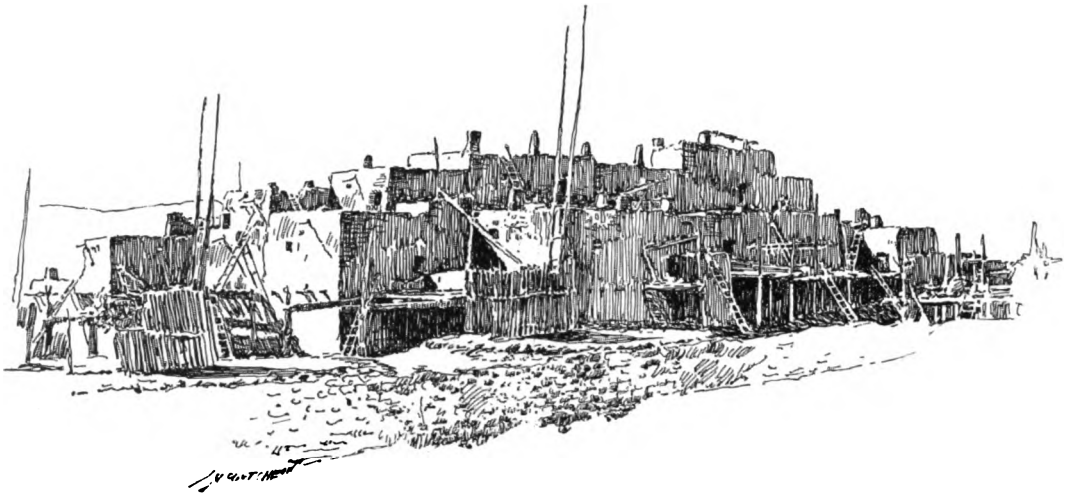

PUEBLO OF TAOS.

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Farm products.—The scattered condition of the Indians renders it impossible to gather statistics of farm produce which can be considered anything more than approximate, but estimates have been prepared by the various teachers showing as nearly as could be ascertained the quantities raised. Crops reported as follows:

Wheat	bushels	65,352
Oats	do	2,682
Corn	do	58,802
Potatoes	do	25
Turnips	do	25
Onions	do	7,295
Beans	do	25,053
Other vegetables	do	1,516
Melons	number	63,000
Pumpkins	do	14,900
Hay, cut	tons	793½

The pueblo of Isleta is so situated that it was impossible for the teacher there to give an estimate which would be satisfactory to himself, consequently this pueblo is not included in the above.

Methods of farming.—These in most cases are of the crudest, and are the same which have been in vogue for the past two hundred years. While the Indians are ready to make use of modern improvements when the same are offered them, they are not sufficiently cognizant of the advantages offered thereby to provide themselves with them. Nowhere can crops be raised without irrigation, which renders agriculture more arduous than in more favored sections of the country. The pueblos ditches and system of irrigation are fully equal to those of any of their neighbors, or in fact to any open-ditch system in use. It is in harvesting and thrashing their grain that the most antiquated methods prevail, wheat and oats being harvested with the old reaping hook which has been in use for thousands of years. Thrashing is done on a thrashing floor in precisely the same manner as among the peoples of three thousand years ago, viz, by driving animals over it until the grain is tramped out of the straw. In the process it becomes mixed with all manner of foreign substances, which have to be picked out with the fingers or washed in water from a ditch. It is needless to say that grain thrashed in this manner will not bring as good price on the market as it should. Even while having to contend with such discouragements several of the pueblos raise grain for market. If they were furnished with a few thrashing machines, one of which could be used by several pueblos, they would be enabled to make far larger profits on their grain and would raise more for market, thus enabling them to overcome their extreme poverty and advance in civilization.

Farmers.—During the year farmers have been appointed at Zuni and at Jemez. Although but a few months have elapsed since these employees were assigned to duty the beneficial results are already apparent.

Arts, etc.—The Pueblo Indians have always been noted for their proficiency in making pottery. The pottery produced is very beautiful, but it is also very fragile and can not be shipped without the greatest care in packing. This results from the method of manufacture. The dirt is made into a soft mud and pressed into the desired shape with the hands, after which it is dried in the sun. When it has become sufficiently hardened it is polished by rubbing with the palm of the hand and painted in various fantastic designs, after which it is burned in a slow fire kindled in the open air. All of the pueblos make more or less pottery, and each pueblo has its distinctive designs.

Weaving is also carried on to some extent in a few of the pueblos.

Schools.—There are now seventeen day schools in this agency, three having been organized during the past year. The attendance has been exceedingly good, as shown by the following:

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Statement of attendance at schools of the Pueblo and Jicarilla Agency, N. Mex., for the year ending June 30, 1899, as compared with the year ending June 30, 1898.

School.	Average attendance.		Increase.	Decrease.
	1898.	1899.		
			Per cent.	*Per cent.*
Acoma	6.69	20.39	305	
Cochiti	11.73	15.99	36	
Isleta	16.52	30.09	22	
Jemez	26.43	26.71	9	
Laguna	15.78	31.06	33	
Nambe		16.93		
Pahuate	12.07	14.10	10	
Paraje		28.55		
Picuris		12.66		
San Felipe	17.57	25.55	44	
San Ildefonso	17.34	35.69	106	
San Juan	16.69	18.15		2
Santa Clara	14.36	19.61	37	
Santo Domingo	14.26	20.24	41	
Taos	34.92	34.39	38	
Zia	24.07	36.25	52	
Zuni	40.69	42.24	5	
Total	261.32	410.48		

Net increase agency schools for year, 57 per cent.

Most of the buildings are still in a very bad condition, though they show improvement over last year in some instances. Deeds to school sites have been secured at Nambe and Zia, and deeds have been promised at San Felipe and San Ildefonso, at which four places steps are now being taken to erect new school buildings costing from $1,000 to $1,500.

All the schools are now fairly well seated, nearly 200 double desks having been sent out during the year.

The work of the teachers has been of excellent character, in most cases showing a great amount of tact and interest in filling the schools to their utmost capacity, some of them showing an average attendance greatly in excess of the number which can be properly accommodated in the buildings.

During the year about 200 children have been sent from among the pueblos to the nonreservation schools at Santa Fe and Albuquerque, who, with the 742 children in the day schools and others in the contract and denominational schools, as well as those who were previously attending these nonreservation schools, brings up the total of 1,102 children now under educational influence.

Below is a detailed account of each of the day schools:

Acoma.—This school has shown great progress, especially in March and April, when the capacity of the building was taxed. The teacher, Miss Cora A. Taylor, has done her duty well. The industrial work and kindergarten work deserve especial mention. The girls have been taught to make their own clothing and show much skill in the work.

Cochiti.—As this pueblo was visited with two lingering epidemics during the year the school has not done as well as some others, but it has done wonderfully well considering the conditions. Nearly every month has shown an increase in attendance in spite of all difficulties. Mrs. J. B. Grozier, the teacher, has worked incessantly with the sick and has been a mother to the entire pueblo as well as to the school.

Isleta.—This school, while showing some progress during the winter, is not quite as satisfactory as it should be. The attendance for the winter months was good, but the spring months showed quite a decrease. The work of the teacher, Mr. James Hovey, is fairly good.

Jemes.—This is one of the best schools in the agency. The attendance is quite large, owing to the noonday lunch given here. The capacity of the building is severely taxed, and were there facilities a much larger attendance could be secured. Miss Emma Dawson, the teacher, has shown much tact, good judgment, energy, and executive ability in the discharge of her duties.

Laguna.—The school here was closed for several weeks on account of the smallpox, during which time the teacher, Mrs. Annie M. Sayre, worked heroically nursing the sick and caring for their wants. The death list would have been much larger but for her efforts.

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The present teacher, Miss Margaret A. Bingham, is faithful and competent. She has increased the attendance largely since going to Laguna.

Nambe.—This school is one of our best in discipline, order, and method. All the children in the village are enrolled. The kindergarten work is exceptionally good. There is nothing but commendation to say of Miss Lampson and her school.

Pahuate.—This school, up to April 30, while under charge of Miss Annie H. Nichols, showed good progress both in attendance and school work.

Paraje.—This school was started May 1 and is proving most successful. Miss Fannie J. Dennis, formerly matron at the Zuni school, was promoted to the position of teacher here and has demonstrated that confidence was not misplaced in thus promoting her. Her school is progressive and fully up to the standard.

Picuris.—This is another new school started last April. During the short time it has been in session the teacher has had excellent success, and the attendance has been good considering the size of the pueblo. While this school can never be very large it gives promise to be among the most successful in character of work.

San Felipe.—During the early part of the year this school showed a decrease in its attendance, but this was compensated for by a large increase during the winter months. Mr. Taber and wife were hard-working and conscientious employees, and this good showing was largely due to their efforts.

San Ildefonso.—The showing made at this place has been almost phenomenal. With a school building having a capacity for 21 pupils and a scholastic population of 43, 7 of whom were in attendance at the nonreservation school at Santa Fe for a large part of the year, the year's average attendance was 35.69. Too much praise can not be given the teacher, Miss Anna H. Turner, for her energetic and persistent efforts in filling up the school and in keeping pupils in school who have once entered.

San Juan.—This school is further advanced than any other day school in the agency. Mr. Felipe Valdez is a faithful, capable teacher and a young man of sterling character. His school is remarkably well advanced, of good manners and breeding. Mr. Vlades plays the violin, using it for sacred and school music, much to the advantage of the school.

The children here sing nicely, enunciating as clearly as white children of the same grade. The comparative statement shows a slight decrease in average attendance, but this is fully accounted for by the large number who have entered the nonreservation schools from this pueblo during the past year. There are now more than 50 children from San Juan in attendance at Government and denominational boarding schools.

Santa Clara.—Under the charge of Mr. W. C. B. Biddle this school has made much progress during the year, showing a steady increase of attendance. His methods of teaching are good and results entirely satisfactory.

Santo Domingo.—The school here consists entirely of boys, but is doing fairly well. Mr. Holsinger has had greater difficulties to contend with than any other teacher in the agency, but he has succeeded in making his school compare favorably with the others. He is a faithful and conscientious worker and deserves great credit for what he has done.

Taos.—The Taos school is one of our largest, the attendance running from 35 to 46. The work of the teacher, Mrs. Alice C. Dwire, is entirely satisfactory. She has shown marked ability in handling so many ungraded pupils and at the same time teaching industrial work to the women of the village, besides caring for the numerous and ever-present sick.

Zia.—This school was in charge of Miss Margaret A. Bingham the first part of the year, but later was turned over to Mrs. Annie M. Sayre, of Laguna. It has made uniform progress, and on account of several attending who are past school age the average attendance for the year exceeds the scholastic population. The buildings are a disgrace to the service, but the school is a credit to both teachers.

Zuni.—The Zuni school had a very hard experience this year, but in spite of the terrible scourge which swept over the pueblo the school shows an increase in attendance. When it was reopened, about the middle of February, nearly all the children were in a very weak condition, resulting from the disease from which they were just recovering, which rendered much school work impossible for some time. The teachers, too, were utterly exhausted with their excessive duties in nursing the smallpox. I desire to emphasize the fact that it is impossible for employees in the Indian service to show more sacrifice, more heroism than did the employees of the Zuni school. Working from early morning till late at night, visiting smallpox patients, climbing ladders and descending into the polluted and filthy atmosphere of Indian homes with as many as seven infected

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patients lying on the floor of the room, relieving the sufferings of the living, and attending to the last offices for the dead, takes no common devotion to duty. History may not record these heroines, but any positions which these employees can fill to which they can be promoted will be but simple justice to them.

New schools.—New schools have been asked for at Tesuque, Santa Ana, Ojo Caliente, Nutria, and Poscado, the last three being outlying villages belonging to the Zuni pueblo. Experience has shown that wherever the Indians themselves request a school, as they have done at each of these places, it is a success when established, and I have no doubt these will prove no exceptions.

In addition to the schools which depend directly upon this agency there is a contract boarding school at Bernalillo, N. Mex., which is doing excellent work. The rooms, buildings, and premises generally are kept neat and clean and in first-class condition. A school garden is kept where the children are taught modern methods of raising vegetables and various kinds of industrial work. I can not say too much in praise of the effectiveness of this school.

Housekeepers and noonday lunches.—The appointment of a housekeeper at San Felipe and the noonday lunches which were authorized at that and several other schools have proved a decided success in increasing the attendance, and the system should be maintained and extended.

In general, I wish to say that the excellent showing made by all the schools for the past year has been due to the earnest and persistent efforts of each employee of this office, and the credit belongs to all.

Missionaries.—The missionaries of the Dutch Reform Church, Mr. A. Vanderwagon and wife, are supported at Zuni. Dr. C. E. Lukens is a medical missionary at Laguna, supported by the Presbyterian Church, and is doing a good work among the Indians. He rendered valuable service in fighting the smallpox and relieving the sick from other diseases.

Two teachers who conduct a school at Soama, a village of Indians lying between Laguna and Acoma, are also supported by the Presbyterian Church, and are doing very successful work.

In the St. Catherine's Indian School of this city, conducted by the Sisters of the Blessed Sacrament, about 100 Indian children are taught and cared for each year. Among the progressive Indians at the pueblos near Santa Fe are found the returned students from this school.

Health.—During the first four months of the fiscal year almost all the pueblos were severely afflicted with malaria, in most cases evidently caused by the bad water supply. This was especially true of the pueblos of Cochiti and Sandia where the disease was the worst. At Sandia during the month of August there were five deaths in twenty-one days, although it is a small pueblo of less than 100 inhabitants. It was found that the disease was caused by drinking stagnant water from an irrigating ditch. This condition has been remedied by the purchase of a pump and placing same in a well dug by the Indians themselves, thus insuring them in future an abundant supply of pure water for drinking purposes. At Cochiti the malaria was more virulent and persistent, about thirty dying and the sickness continuing until the middle of November. A well has been authorized, and when completed will greatly diminish the danger of such scourges in future. A few cases of what appeared to be cerebro-spinal meningitis appeared during the latter part of October, but the disease did not become epidemic.

When I took charge of the agency, July 1, 1898, I found that the smallpox which had been raging at Isleta for the past six months had about run its course at that pueblo, and very soon after my taking charge it entirely disappeared therefrom. During the months of June, July, and August it had reached the pueblos of Sandia and Santa Ana. During the latter part of August the disease obtained a foothold in the large and scattered pueblos of Acoma and Laguna and their outlying villages. The school at Acoma was closed from September 25 to October 10, when conditions had improved sufficiently to warrant reopening. The teacher at Pahuate requested authority to close, but before same reached her a change for the better rendered it unnecessary. At Laguna the school was closed October 17 and so remained until December 13. The teacher at Cochiti reported smallpox November 5, and it remained in this pueblo until February 10, causing twenty deaths. At Jemez the first appearance was October 26, after which time it spread slowly for a while, there being only sixteen cases December 2. By December 19 the number had increased to sixty cases and school was closed. However, it was reopened January 2, the teacher thinking that she could be better able to protect the children from infection if they were in school than if they were taken care of themselves in the village under no restraint whatever. Fifty-seven died here before the disease ran its course.

The first case was reported from the large pueblo of Zuni on November 18,

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though this pueblo had been threatened for several months. Both myself and the governor of the pueblo gave strict orders that no one should visit the pueblos afflicted, but one man disobeyed these orders and visited the pueblo of Acoma during some of their festivities, where he contracted the disease and carried it to his home. Upon receipt of notice that there was a case in Zuni I immediately telegraphed for fresh vaccine points and sent the supervising teacher there with full power to take such measures as might be necessary to stop the spread of the plague. He endeavored to quarantine the case, but the mischief had already been done and the disease spread with frightful rapidity, causing many deaths. It was not finally eradicated until March 9.

During the month of February there were twelve cases and one death at San Felipe, and fifteen cases and three deaths at Santo Domingo, but the disease did not gain much of a foothold, these two pueblos having been thoroughly vaccinated in January before the appearance of the scourge.

Later in the year one case appeared at San Ildefonso, two at Santa Clara, and one at San Juan. No deaths at either point.

The whole history of this epidemic proves that the responsibility rests with the utter worthlessness of the vaccine points furnished to this agency. Smallpox was first reported in this agency in December, 1897, by Captain Nordstrom, who was then Indian agent. He received and distributed, with instructions to use, 3,000 vaccine points immediately. Nearly all were actually so used. Later Captain Cooper, successor to Captain Nordstrom, distributed 5,000 more points throughout the agency. Captain Cooper also employed a physician to vaccinate all the Indians of the pueblos of Jemez and Zia. He used fresh vaccine points but there were very few "takes," and nearly all those considered as "takes" were very slight. That this vaccination was ineffectual is shown by the fifty-seven deaths reported above.

On August 17 I received notice that the pueblo of Zuni was threatened with smallpox. I immediately telegraphed for vaccine points, and on August 22 I mailed to Zuni 200 points received in response to my telegram. Again, on December 12, I mailed to Zuni 400 points that day received. Nearly a thousand vaccinations were made with these two consignments of points, with only a few cases taking. While Jemez and Zuni were the most utter failures, vaccination with these points was not successful in a single pueblo.

In response to an inquiry from the honorable Commissioner of Indian Affairs, relative to the efficiency of the points, I wrote the following letter:

PUEBLO OF JICARILLA AGENCY,
Santa Fe, N. Mex., January 26, 1899.

SIR: Referring to office letter of January 23, 1899, finance, 58096-98, 1435-99, I have the honor to state that whatever may have been the quality of the vaccine points when sent out by the vaccine establishment, they were worthless when received in this office. If they were subjected to too much heat or light, it was in the mails and not in this office. The points were used time and again upon employees of this office immediately upon receipt with no effect whatever. Time and again the points were mailed to different places and used in vaccinating Indians within five days after the date when they were said to be charged, but without effect. These points were used before they had time to be subjected to light or heat, and during the very few hours when it was necessary for them to be kept in this office they were kept in a cool place as directed.

My complaint is not about any special delivery of points; but points have been sent to this agency at least six times since I have been in charge, and they have not been satisfactory in a single instance.

Very respectfully,

N. S. WALPOLE,
United States Indian Agent.

COMMISSIONER OF INDIAN AFFAIRS,
Washington, D. C.

I had several times stated that points received were unsatisfactory, but had not given particulars, which gave rise to the inquiry above referred to.

As soon as smallpox was reported in a pueblo, I addressed a letter to the governor warning him of the danger of the spread of the disease and giving instruction how to maintain a quarantine. On October 26 I was in the pueblo of Zuni, and hearing that there would be a fiesta at Acoma in a few days, I called the attention of the Indians in council assembled to the fact that smallpox existed in that pueblo and instructed them not to go to Acoma. The governor also forbid all his people going. One man disobeyed orders and was taken sick about the middle of November and the night before the occurrence of the "shalake," the great reli-

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gious dance of the Zunis. His house was used by one of the clans as headquarters, the report having been circulated and believed by the Indians that it was not smallpox but chickenpox with which the man was afflicted. In this way all Zuni was exposed before preventive measures could be taken, or a quarantine established.

The scourge having spread to three pueblos which had previously escaped, on November 19 I addressed the following letter to each of the governors of pueblos under this agency:

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., November 19, 1898.

SIRS: Smallpox is spreading to such an alarming extent among the pueblos that you are instructed not to let a single person of your pueblo visit another Indian pueblo. This order must be obeyed. Any Indian found visiting another pueblo without authority from this office will be arrested and jailed by the local authorities and sheriffs, for the reason that the smallpox virus is carried from place to place in the clothing.

Very respectfully,

N. S. WALPOLE,
United States Indian Agent.

THE GOVERNORS OF THE VARIOUS PUEBLOS.
(Care Teacher Indian School.)

On the same day I wrote as follows to Mr. Charles N. Burton, supervising teacher:

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., August 19, 1898.

SIR: We have a letter, dated November 16, from Miss Elmira R. Greason, principal teacher at Zuni, stating that there is one case of smallpox at Zuni pueblo. You will please leave Santa Fe for Zuni this afternoon, and make a thorough investigation regarding the smallpox, and if found as represented you will proceed at once to quarantine and to take all other necessary steps to prevent the spread of same. Also instruct Miss Faurete, field matron Zuni Reservation, to see that the various Indians live up to your instructions. We have instructed Miss Greason to work in harmony with you and to follow your advice strictly. Would suggest that you remain at Zuni at least three or four days.

Upon your return to Santa Fe please investigate Laguna, Pahuate, and Acoma, provided you find it safe to do so.

Very respectfully,

N. S. WALPOLE,
United States Indian Agent.

MR. CHARLES N. BURTON,
Supervising Teacher, Santa Fe, N. Mex.

I also sent the following letter to the governor of Zuñi Pueblo:

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., November 19, 1898.

SIR: Having heard that there is a case of smallpox at Zuñi, I desire to inform you that Mr. Charles E. Burton, supervising teacher, will go to your pueblo at once to look after the situation there. You will please give him every assistance in your power and cooperate with him in every possible way. I further desire that you give attention to his suggestions and do everything in your power to carry them into effect. This is very important, as by this means you will be enabled to prevent the spread of the disease, and thereby save the lives of many of your pueblo, while if the disease is allowed to spread it is probable that hundreds of the Zuñi people will die from the effects of the disease. I desire very much to save your people's lives and do everything to guard their health.

Very respectfully,

N. S. WALPOLE,
United States Indian Agent.

GOVERNOR OF ZUÑI PUEBLO,
Zuñi, N. Mex.
(Care Miss Elmira R. Greason.)

Mr. Burton remained in Zuñi ten days, at the end of which time everything appeared to be safe; but a day or two after his departure several new cases appeared.

All the employees at Zuñi did everything in their power to relieve the suffering, but owing to a suspension of mail facilities no word was received from Zuñi from

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the middle of December until January 4, during which time the plague spread most rapidly, and hearing nothing it was supposed that everything was progressing satisfactorily. On January 4 I requested authority to eradicate smallpox. I also ordered several vaccine "crusts" from a reliable vaccine farm, and immediately upon their receipt sent Dr. David Knapp to Zuñi, with full power and authority to take such steps as might seem proper to stamp out the disease. On February 21 he returned to Santa Fe, having succeeded in stamping out the disease.

The disease having spread throughout the Territory, and experience having proven the inefficiency of previous vaccinations, on January 14 I addressed the following letter to the honorable Commissioner of Indian Affairs:

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., January 14, 1899.

SIR: I have the honor to request authority to purchase twenty-five vaccine crusts at an expense of $50, and to expend not exceeding $375 to employ physicians to vaccinate all the Pueblo Indians of this agency. These physicians are to be employed as follows:

One for the pueblos of Taos and Picuris, $50.
One for Laguna, Acoma, Pahuate, and Isleta, $100.
One for Santa Ana, Santo Domingo, San Felipe, and Cochiti, $100.
One for San Juan, Santa Clara, and San Ildefonso, $75.
One for Nambe and Tesuque, $50.

It is necessary to have this vaccination done at once, or a great per cent of the Indian population will be swept away within the next few weeks. From an economical standpoint it might be best to have Dr. Fouts, from the Jicarilla subagency, to come down and do the work, but before one physician could vaccinate several thousand Indians, many would have contracted the disease.

The vaccine points that have been used heretofore have proven so utterly worthless that I have asked the authority to purchase the vaccine crusts that are used here with perfect success. One thousand were vaccinated at Zuñi with the points with very few good "takes." The same is true of the thousands vaccinated at the various other pueblos. The necessary precautions were taken before this epidemic broke out, but as the points were not good no results were obtained. The faith of the Indians has been destroyed to a great extent by the failure of vaccination to protect them from the disease.

The Mexican towns near the Indian towns where I wish this work to be done are infested with the disease, and unless extreme precautions are taken it is only a question of a few days till every pueblo in the agency will have it.

Very respectfully,

N. S. WALPOLE,
United States Indian Agent.

The COMMISSIONER OF INDIAN AFFAIRS,
Washington, D. C.

The above authority was granted by wire, and vaccination made as indicated above with perfect success, almost all cases vaccinated taking perfectly, and in a short time the disease was wiped out of the pueblos, regardless of the situation in the neighboring towns, where it raged for months after disappearing from among the Indians.

The present health condition of the pueblos is good, and there is at present no serious illness among any of them.

Physicians.—The experience of the past year has emphasized and increased the need of the physicians for the Pueblo Indians, which I mentioned in my last report last year. The great benefit which the afflicted derive from the scant supply of medicine furnished by the various teachers, and especially the success of the general vaccination last January, have given these Indians a faith in the prescriptions of white men which they never had before. They are continually coming to the various employees for medicines for the numerous diseases which they are heir to; but should some of the employees through inexperience make a serious error in distribution of medicine much of the good which has been done would be lost, and the Indians would in a large degree relapse into their former superstitious beliefs. But were physicians established among them they would be able to strengthen the growing disposition to place faith in the ways of civilization.

I have the honor, therefore, to renew my recommendation that five physicians be appointed for these various pueblos, which should be divided into five districts, as follows: The pueblo of Zuñi, containing 1,422 inhabitants, to be the first district and to have a resident physician; the pueblos of Acoma, Isleta, and Laguna, containing about 3,000 inhabitants, to compose the second district, with

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a physician resident at Laguna; the pueblos of Cochiti, Jemez, Santa Ana, Santo Domingo, Sandia, San Felipe, and Zia, containing 2,957 inhabitants, the third district, the physician to reside at Bernalillo; the pueblos of Taos and Picuris, containing 498 inhabitants, the fourth district, the physician to reside at Taos City, three miles from Taos pueblo; the pueblos of Santa Clara, San Ildefonso, San Juan, Nambe, and Tesuque, containing 958 inhabitants, to be the fifth district, the physician to reside at Santa Fe or Espanola. These pueblos have been grouped with reference to their proximity to one another rather than to their number of inhabitants.

Witch hangers.—On November 23 I made the following report of my action in this case:

PUEBLO AND JICARILLA AGENCY,
Santa Fe, N. Mex., November 23, 1898.

SIR: I have the honor to state that I found four Zuñi Indians confined in the Albuquerque jail awaiting trial for assault committed upon an old woman of their pueblo in March, 1897. These people thought that she was a witch and attempted to take her life, in which endeavor they almost succeeded. They had been in jail about thirteen months, during which time their trial has been postponed from term to term of the court. After consultation with Colonel Duncan, Indian inspector, Mr. Howard was sent to Albuquerque to procure the release of these Indians. They have, through his efforts, been released to appear before the court at its February term. The moral effect of this long imprisonment has been good. The Indians assured me that on account of the kind treatment these prisoners have received from this office they will place twenty-five children in the Albuquerque school. I have had a consultation with the district attorney, and he informs me that, in his opinion, when the case comes up for trial it will be impossible to convict them. In view of this it seems to me that it would be better to have the case annulled, with the understanding that they left on their good behavior, than to permit them to be acquitted.

This is the same case which has caused so much trouble during the administration of the previous agents, and was fully reported by Captain Nordstrom something more than a year ago.

Very respectfully,

N. S. WALPOLE.
United States Indian Agent.

The COMMISSIONER OF INDIAN AFFAIRS,
Washington, D. C.

Upon the recommendation of this office the case was annulled when it came up for trial at the February term, and the Indians were given to understand that it was an act of clemency on the part of the Government and based upon the presumption of their future good behavior.

Irrigating ditches.—A majority of the pueblos are sole owners of irrigating ditches, from which they are enabled to supply their lands with water. Some of these are among the best ditches in their part of the Territory, and supply the pueblos with an abundance of water. In some of the pueblos, however, the supply of water is inadequate for all the ditches and there is frequent scarcity.

The case of the Albuquerque Land and Irrigation Company *v.* The Pueblos of Sandia, Santa Ana, and San Felipe has been decided in the court in favor of the company. This is a case where the company proposes to construct an irrigating ditch through the land of these pueblos. It was opposed because at certain seasons of the year the Rio Grande has not sufficient water to supply the ditches of these pueblos and of the company at the same time, and the Indians fear that, as the headworks of the the proposed canal are above the head of their ditches, it will cause a scarcity of water in their ditches. The decision of the court permits the ditch to be dug, but does not permit the appropriation of water which the Indians at present have.

In the early spring the pueblo of Santo Domingo became engaged in litigation over the title to their ditch, water rights in same being claimed by certain Mexicans and water taken therefrom without consent of the Indians. The result of the suit was a complete victory for the Indians, they being given full and absolute ownership and control.

The pueblo of San Ildefonso became involved in similar disputes, but the matter was settled amicably, and I hope they will have no further trouble.

Civil proceedings have been brought by various parties against the pueblo of Nambe in reference to control of an irrigating ditch which is on Indian land and was constructed by the Indians. The case will be tried shortly.

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Litigation.—Following is a résumé of the cases now pending or about to be instituted in the various courts in which pueblos are interested:

Acoma pueblo: None.

Cochiti pueblo: Nothing farther than a possible conflict of boundaries with the Caja del Rio grant.

Isleta pueblo: Should cases Nos. 274 and 275 of the land-court docket. now on appeal to the United States Supreme Court be affirmed, the matter of their surveys will be pending for settlement.

The matter of survey of cause No. 273 of the docket of the United States land court—the "Lo de Padillo" grant—is pending in said court.

Several of the Isleta Indians are incarcerated under indictment for assault with intent to kill.

I am advised by the attorney for the Pueblo Indians that the railroad is responsible for damages for killing an Indian boy of this pueblo. The matter has been placed in his hands with instructions to take steps to collect said damages. In case the railroad refuses to pay damages, suit will be brought so soon as the Indians can raise funds to pay court fees.

Jemez pueblo: Conflict in boundaries with the Vergara grant.

Laguna pueblo: The San José del Encinal grant, subject of cause No. 114, United States land court, which conflicts with the Pahuate tract, property of the pueblo, was confirmed by the court, but order subsequently entered that no decree of record be made until the United States Supreme Court decides cause No. 112, the Cuyamunge grant case, so that this matter may be said to be pending in the land court.

Suits in ejectment and for trespass in and upon lands of this pueblo are in order, and will be instituted as soon as funds are provided.

Nambe pueblo: An appeal is pending to Territorial supreme court from decision of district court of Santa Fe County, affecting adversely lands of the pueblo.

Suit against pueblo relative to irrigating ditch is treated under heading "Irrigating ditches."

Picuris pueblo: None.

Sandia pueblo: None.

San Felipe: This pueblo was coclaimant with the pueblo of Santo Domingo before the United States land court in causes Nos. 134, 184, and 185, consolidated, for what is known as the "Pasture grant," made to these pueblos jointly, A. D. 1770. The decision of the United States land court in their claim appearing to the pueblos and to their attorney to be contrary to law and justice, an appeal has been taken to the United States Supreme Court. The necessary funds for the printing of the transcript and brief will be raised by these pueblos at much sacrifice, unless the Government will provide for same.

Suit in partition and to quiet title will have to be instituted in behalf of this pueblo and Santo Domingo pueblo in the matter of the "Santa Rosa de Cubero" grant, No. 267 on the land-court docket, in which they have become interested by virtue of ancient purchases. These pueblos own nearly, if not the whole, of this grant, and it is included within their patents, but the claim of other parties render this course necessary.

San Ildefonso pueblo: A question of trespass upon pueblo lands.

San Juan pueblo: None.

Santa Ana pueblo; A question as to the survey under the confirmation of their grant is pending before the land court.

Santa Clara pueblo: The matter of the survey of the Canada de Santa Clara or Juan Tafoya tract, confirmed to this pueblo by the United States land court, is pending therein.

The matter of the Santa Cruz grant, cause No. 184, which offsets the eastern half of this pueblo grant, is pending in the United States land court, and will come up for final hearing at the approaching August term, 1899.

Santo Domingo pueblo: See above relative to San Felipe pueblo.

The Lo de Basquez grant claim No. 178 upon the docket of the land court is in conflict with the pueblos lands of Santo Domingo and order has been made by said court to make the pueblo party defendant. The case may come up for action at the approaching August term, 1899.

Taos pueblo: This pueblo is interested in the proper final adjudication in the land court, in which the same is pending, of the San Fernando de Taos grant, No. 149.

This pueblo claims, by virtue of ancient purchases, a large interest in the Antonio de Martinez of Lucero de Godoi grant adjoining the pueblo league upon the west and north thereof, which grant was confirmed by the United States land court in 1892, but the confirmees deny that any interest is held in said grant by the Taos pueblo.

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The pueblo is much harrassed and imposed upon by trespassers upon their lands, and it will be necessary to quiet title in two suits, one as to the pueblo lands, or league, and one as to the Martines grant. These suits will entail considerable expense which the pueblo is not in a position to incur without sacrifice of some of their farming land.

Tesuque pueblo: None.

Zia pueblo: None.

Zuni pueblo: None.

The attorney for the pueblos has been instructed to push all the above cases as rapidly as possible.

In all these cases which are upon appeal there are certain court costs which the Government has not heretofore paid and which the Indians themselves are unable to pay without selling their farming land, and thus depriving themselves of future means of subsistence. The same applies to those cases which must be instituted in the district court, which includes all cases where lands belonging to the Indians are claimed by parties other than the United States and all cases of water rights.

In view of the above, I respectfully recommend that the sum of $1,000, or so much thereof as may be necessary, be appropriated and authorized for the payment of court expenses in cases in which the pueblos are interested.

Present condition.—On account of the scarcity of rain during the early part of the season, there being practically no rainfall from October until July in any of the country occupied by them, the various crops on which they depend for a living are in most cases a complete failure. Corn was planted in the dust in the hope that rain would come and supply water for irrigation, but the rain did not come and consequently the seed would not germinate. In most cases what little water was found in the streams was the subject of continual dispute between the various parties owning the water rights, none of them being able to secure the amount of water usually appropriated. In addition to failure of the cereals the late frosts in the spring destroyed all the fruit, so that the magnificent fruit trees which furnish a large part of the food of the people are this year of use only for their shade. Last year the great poverty of two of the pueblos was such that it was necessary to extend Government aid in order to prevent starvation. Every appearance points to the fact that through no fault of their own many of the Indians will be on the point of absolute starvation, and it will be necessary to extend far more aid than last year to prevent numbers of them from dying from hunger.

Last year 12,793 acres were cultivated by the Indians; they raised thereon 65,353 bushels of wheat, 58,801 bushels of corn, 25,053 bushels of beans, besides small quantities of other vegetables. A very conservative estimate of the value of products of Indian labor sold in the market last year places the amount at $50,000. These figures show that the pueblos are worthy of the utmost consideration and are not afflicted with proverbial "laziness" of the other Indian tribes of the United States. They have always been a self-supporting people, living in peace with their neighbors. Their disposition to permit themselves to be imposed upon rather than engage in strife is taken advantage of by their neighbors, and thus they lose some rights which belong to them.

They own 7,294 horses, 490 mules, 3,018 burros, 3,184 cattle, 1,019 swine, 70,332 sheep, 2,020 goats, and 3,871 domestic fowls.

JICARILLA.

Population.—The census taken June 30 shows a population of 832—407 males and 425 females. There are 251 children of school age, 120 being males and 131 females.

Agriculture.—This reservation has very little arable land, but is one of the best grazing districts in the Territory. Water could be secured from Dulce and Stinking lakes, 6 and 26 miles south of Dulce, which is the agency headquarters, and a part of the reservation be placed under irrigation, whereby the Indians could be enabled to raise farm products successfully.

Timber.—A large part of the reservation is covered with exceptionally fine timber, part of which could be marketed and the proceeds used in the purchase of cattle and sheep for the Indians. In this way the Jicarilla Apaches can be made self-supporting in a very few years, but unless they are given the means to turn their attention to stock raising they will continue to be a care to the Government for many years to come. This timber standing as it does is of no value to any one, but could easily be the means of giving the Apaches a start in self-support, which would be the means of relieving the Government of the responsibility and transform them from dependents to citizens.

Allotments.—Some years ago allotments were made to the Indians then living, but owing to confusion of names it has been found impossible to deliver most of

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the patents, only about 14 per cent of them being delivered, the others remaining stored away in the agency office for lack of means to identify the Indians to whom the patents belong.

Missionaries.—Two ladies are supported by the Methodist Church at Dulce, and are doing everything in their power to elevate the Indians and give them moral and religious instruction. They hold weekly religious services and in various ways contribute to the uplifting of the people among whom they labor.

Roads and bridges.—It has been impossible to keep statistics of the amount of work done by the Indians on roads during the year, but 6 miles of new road have been built and all old roads and bridges kept in good repair.

Arts and trades.—These Indians are noted for the excellence of their baskets, and arrows, and beadwork. A large proportion of the amount realized from sale of products of Indian labor came from these items.

Indian courts.—The court here is composed of three judges, who look after minor offenses on the reservation. Drunkenness is punished by confinement in the agency jail, 67 cases being so dealt with during the past year.

Products and stock.—There is 800 acres of land cultivated by the Indians, on which they raised 225 bushels of wheat, 600 bushels of oats, 125 bushels of corn, 500 bushels of potatoes, 20 bushels of onions, 35 bushels of beans, and 50 bushels of other vegetables. They also cut 700 tons of hay, part of which was marketed.

They own 1,650 horses, 10 mules, 250 burros, 95 cattle, 2,500 sheep, 500 goats, and 75 domestic fowls. They have the means to care for a much larger quantity of stock of all descriptions.

Issues.—About half the support of the Apache Indians is derived from the issue of Government rations, though the rations issued are not half sufficient to supply their actual needs. Issues are made semimonthly.

There are also small issues of annuity goods each year, but no annuity money, so that all money which they obtain is derived from the sale of their own products.

Education.—These people are as yet without school facilities, and the matter has been very strongly advocated during the past year. Plans and specifications are being drawn for a school building with capacity of 228. This is a very important move and the building should be completed as soon as possible, as the Indians are very anxious to have their children educated, but are unwilling to send them to distant schools. There are on the reservation 251 children of school age, none of whom are in school anywhere.

Health.—I was notified by wire, March 8th, that there was one case of smallpox on the reservation. I took the first train for the reservation and wired to St. Louis for vaccine points and tubes. On reaching Dulce I established a pesthouse and employed nurses to care for the sick. As soon as vaccine matter could be procured the whole tribe was vaccinated. All cases taken sick were confined in the pesthouses, another being established on a different part of the reservation a few days later, until their recovery, when their clothing was burned and new clothing issued to them.

I found it much easier to control the disease on this reservation than among the pueblos on account of these Indians not being so closely crowded together.

Investigation showed that the smallpox was introduced by a Mexican trespassing on the reservation at a point 25 miles from the agency.

During the months of March and April there were 27 cases and 11 deaths.

Too much credit can not be given to the employees for their faithful and fearless work in vaccination and caring for the Indians who were exposed or afflicted with the disease.

Dwellings.—During the past year 42 dwellings were built on the reservation, making a total of 290 now occupied by Indians. They are gradually leaving their tepees for the greater comforts of houses.

Present condition.—The severity of the past winter was such that the Indians were compelled to use their seed grain and potatoes for food in order to relieve their hunger, which necessitated the issue to them in the spring of new seed for planting. There is every prospect that conditions will be more severe this year, as their crops are almost a total failure owing to the extraordinary drought of the past nine months, and they will be compelled to live upon the Government rations, which are not sufficient to keep them from want, supplemented with the small amount earned from the sale of bows and arrows, baskets and beadwork.

Respectfully submitted.

N. S. WALPOLE,
United States Indian Agent

The COMMISSIONER OF INDIAN AFFAIRS,
Washington, D. C.

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INDIANS.

The following is a list of the Indian pueblos in New Mexico, with the population of each:

Acoma, 504; Cochiti, 300; Isleta, 1,060; Laguna, 945; Nambe, 75; Piscuris, 110; Pojaque, 20; Santa Ana, 222; Sandia, 126; Santa Clara, 200; Santo Domingo, 793; San Felipe, 475; San Ildefonso, 112; San Juan, 360; Taos, 375; Tesuque, 85; Zia, 100; Zuñi, 1,500—making 18 pueblos in all.

The Mescalero Apaches occupy a reservation within the boundaries of Donna Ana and Lincoln counties. They are far removed from the predatory tribes, and have not given any trouble since the early eighties.

The Navajos cut a very small figure in New Mexico. Their reservation occupies 15,000 square miles, of which only about 1,900 square miles are within New Mexico, and that small portion is confined to the extreme northwestern corner. These Indians own over 2,000,000 head of sheep, 2,500 head of cattle; the Government is reclaiming their land by irrigation, and the settlers need fear no incursion from them; they are under the charge of an army officer and are perfectly amenable to authority.

In this connection it might be mentioned that the Government never took a wiser step than to remove the control of Indians from civil to military authority. It has worked wonders in New Mexico. The army officers handle the Indians with a certain firmness that quickly begets docility, and the Indians themselves soon learn that they fare better.

MESCALERO RESERVATION.

A marvelous transformation took place on the Mescalero Apache Reservation in southern New Mexico during the two years that First Lieut. V. E. Stottler, Tenth Infantry, United States Army, served as acting agent. The Indians numbered over 500, one-fifth being children of school age. Nurtured in ignorance and superstition and reared in filth and laziness, these Indians have for forty years stubbornly refused to respond to the Government's efforts to civilize them. For a generation they have received rations of beef, coffee, flour, sugar, clothing, farm implements, etc. Good schools were established for them and dwellings built at the Government's expense; still they stuck to their rawhide tepees and persistently refused to school their children or to adopt the civilian dress, adhering to their breech clouts, blankets, and long hair. With the millions expended annually in education, next to nothing was being accomplished. There were about 500 acres of irrigable and good land on the reservation, but the Indians were too lazy to plant crops that would have furnished them with food necessary for their support. It was much easier and more pleasant to draw rations from an indulgent and paternal Government and reserve their energy for war dances and brawls. There were 25 strong, broad-shouldered bucks, educated at the expense of the Government, running around the reservation in paint and blankets. They were too lazy for manual labor. Several educated squaws were married and living in filthy tepees, while girls were taken out of school at 10 and 12 years of age and sold for ponies into a bondage worse than death.

Lieutenant Stottler's predecessor had ordered the bucks to cut their hair, and a revolution resulted. They refused point-blank and that

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settled it. Stottler's first move was to increase the rations of the police. He then informed them that they must all put on uniforms under pain of duress. They reluctantly obeyed. Then he ordered them to cut their hair. This caused a storm, and the matter was allowed to rest for a while. His next command was to abandon tepees and move into dwellings. All children over 5 years old were ordered to attend school. This was too much, and, by the advice of some of the whites, a petition was forwarded to Washington asking for Stottler's relief as agent. No attention was paid to the request, and the ringleaders were spotted and severely punished. The chief of police, an Indian, had been one of the instigators in this move, and he was discharged as such and put on reduced rations. Several of the headmen of the tribe were ordered to work and deprived of the office of spokesmen, under which system the other members made their wants known through the agent. In this capacity the headmen had been allowed extra rations and a small salary, and their reduction to the ranks made it possible for any member of the tribe to apply personally for what he needed in the way of land, implements, etc. This was an important point—to break the power of the chiefs and destroy tribal relations. It was constantly impressed upon the Indian that in a few years rations would be cut off entirely, and those who had not taken the land for cultivation would go hungry. At first they laughed at this, but the officer, by way of example, cut off the food occasionally, and they at last came to realize that it would be a very easy matter to stop all rations. This had a salutary effect, and induced many of them to go to work. Every man and woman caught manufacturing "tiswin" was made to understand that it meant a long season in the guardhouse on bread and water.

Now, all is changed. The Government's agent is absolute master. Vegetables of all kinds are raised in abundance, and everything in the way of stock on a farm is also raised by the Indians on this reservation. During 1896, upon the recommendation of Lieutenant Stottler, the Government issued 5,000 sheep for distribution among the tribe and 500 for the school. The idea was to have the Indians raise their own mutton and then cut off the supply of beef, which cost the Government $6,500 per annum. These Indians have been made almost self-supporting by the methods inaugurated by Lieutenant Stottler while in charge. Every male on the reservation has cut his hair, put on civilized dress, and taken a piece of land which he has fenced, and commenced to raise grain and vegetables. They all have cabins with cook stoves and utensils. Every man has 10 head of sheep and a like number for each member of his family. Every child on the reservation is at school. Every man has a wagon, harness, and plow. In the short period of two years these Indians have been transformed from lazy, filthy savages in red paint and breech clouts into reasonable working human beings with a care for to-morrow and a desire to become useful citizens. The United States Indian agent who has taken the place of Lieutenant Stottler says that the Mescalero Indians are steadily advancing toward civilization and self-support; that they now receive no aid from the Government in the way of rations and supplies. Their ranches compare very favorably with the ranches of their white neighbors which surround the reserve. Their crops of oats, wheat, corn, potatoes, cabbage, etc., are in the finest condition, and an abundance for sale is expected. They expect to dig 2,000,000 bushels of potatoes this fall, worth at 1 cent per pound, $20,000. This is only one small item, as their oat and wheat crop should bring in more than the above amount. Altogether, the great progress of the Mescalero tribe of

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Indians in this Territory is something to be proud of, and it demonstrates the possibilities of this race, which heretofore has always been a ward of the Government.

NAVAJO INDIANS.

FORT DEFIANCE, ARIZ., *August 28, 1899.*

MY DEAR GOVERNOR: Complying with your request for a statement concerning the condition of the Navajo Indians under my charge, I respectfully submit the following:

The condition of the Indians on this reservation is undoubtedly improving financially and morally, although the last winter was probably the most severe of any in the history of this country, which caused a heavy loss among their flocks, on account of the very deep snow and the unusually cold winter. This condition, however, was not confined to this locality alone, as the severe cold extended over the greater part of the United States. Notwithstanding the severity of the winter there has been no case reported to me of any Indian either starving or freezing. From the most reliable information I can obtain the greatest loss occurred on the western part of the reservation in Arizona, in a country that has usually been free from snow. The spring has been rather backward and in some localities there has been a lack of moisture, but those who planted and attended their crops well will have quite a fair crop, and as we have had during July and August copious showers of rain the grass has made such wonderful growth that every indication now is that their stock will go into the winter in good condition.

The disposition of these people is generally good. They very seldom have any serious troubles among themselves and but very few complaints are made against them by the whites, and nothing of a serious nature, although along the border of the reservation they have very frequent business transactions with the white settlers. Some on the eastern border, and especially a few that reside off the reservation in New Mexico, are inclined to more readily adapt themselves to the ideas and customs of the whites, and I have induced a few of them to dig wells on their places for the purpose of procuring water for their herds, which has proved a grand success, as some of them have secured an abundance of water at a depth of about 20 feet, and I shall use every effort possible to induce others to follow their example, which, if successful, will go far toward solving the water problem. The main support of these people is stock raising and the manufacture of Navajo blankets; the sale of blankets alone will amount to possibly $100,000, and the wool clip sold will far exceed that. The sheep pelts and goatskins sold from their butcher stock will amount to many thousands of dollars.

Very respectfully,

G. W. HAYZLITT,
United States Indian Agent.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

INDIAN SCHOOLS.

SANTA FE INDIAN INDUSTRIAL SCHOOL,
Santa Fe, N. Mex., September 6, 1899.

SIR: I have the honor to transmit herewith copy of my first annual report of the Santa Fe Indian Industrial School, which original report I have sent to the honorable Commissioner of Indian Affairs.

I receipted for the property and took charge September 1, 1898. For statistical information see tabular report herewith transmitted. It has been the aim of the management to carry the school as an entity, with its two main functions of exactly the same importance. As the name indicates, this is an industrial school, and the handicraft functions must not in any case be overshadowed by the literary function; both must go hand in hand. To this end I have labored early and late to impress upon both employees and pupils that each and every employee of the school is a teacher in the fullest sense of the word. I maintain that my school cook should occupy the same social status as does the most advanced literary teacher in the corps. When a condition of affairs pertains at a school that will allow of a teacher considering himself better than some other teacher because, perforce, one teaches the three R's and the other the manipulation of material by hand, there is, to my mind, something wrong. I am glad to say that at this school our handicraft employees are not considered shoemaker, tailor, etc., but teachers of the various trades mentioned. It is wonderful what a change has come over

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this school since the pupils have come to understand that this is a fact. Now the boys and girls in the various trade departments take criticism as kindly from their manual instructors as they do from their instructors in the school rooms. They have learned that the whole purpose of the shops is instruction. They fully realize that they are in the various shops to learn how to manufacture the numerous articles. The learning is what they are there for and whatever they produce is a "by-product." For instance, they manufactured a wagon, not because we needed such an article, but because they learn from the making how to make another wagon.

As shown by statistics, this school can accommodate 300 pupils. The plant is large enough so that we can make an average of this number, which, of course, means that some time during the school year we must carry many more than 300. I know that it is not an uncommon thing for schools of this class to carry an average attendance of 100 per cent upon the enrollment. I can't do this, and I "am not much of a George Washington, either!"

As data in the Indian Office shows, the number of children of school age who have no school accommodation and who are in reach of this school goes up into the thousands. It would seem that this plant should be enlarged to at least twice its present capacity. I am satisfied that the moment we are really equipped to give first-class instruction in the various trades we will be overrun with real Indian children. Of all the various tribes of Indians whom I have met and studied the ones which naturally gravitate to this school are the most thoughtful and observant. For instance, in all my years of work with Indians before coming here I found, without almost a single exception, that the Indian parent demands three things of the school and three only. These demands are as follows: (1) My boy must be well fed; (2) he must be well clothed; (3) he must not be punished. Here they expect these three things and enforce them with a resounding continuous howl when these three things are not complied with; but they demand more. When inspecting the industrial departments their criticisms are just if they are not generous. These huts which we call shops are not at all to their liking. The excellent tools of which we have a fair supply invariably meet with their hearty commendation. The competent tactful employee is known, marked, and complimented, both to his face and to the management, but the incompetent instructor invariably meets with that expressive "ugh," which to us who know the Indian means almost a whole volume. I am satisfied that were the equipment of this school what it ought to be all we would need to fill it up to twice its present capacity would be to invite the headmen of the various tribes and pueblos to come and inspect the plant thoroughly, and they would be followed by all the real full-blood Indian children we would care to see in one school. We take special pride in the fact that without a doubt these pupils average nearer pure Indians than do the pupils of any other nonreservation school in the service, and it is the consensus of opinion that for "staying qualities" when once educated the full blood far exceeds the mixed blood.

The location of this school is ideal. The climate is all that could be desired, the water is superexcellent, the drainage is perfect, the personnel of the force of employees is of the best, the equipment in a literary sense is good, but to get and hold our pupils our equipment for manual instruction must be put upon a plane equal to that of our very best Eastern schools. Nothing short of this must be thought of. Give this school an equipment such as the most advanced thinkers in your office would indorse, and we will fill a school of any capacity that the Indian Office may see fit to erect here, and we will fill it with real Indian youth; and, further, we will fill it without drawing upon children who would, were this school not here, be in some Eastern school. I am most thoroughly in sympathy with the Eastern schools and rejoice to see them grow in numbers and efficiency, but there are Indian children almost without numbers in the vicinity of this school who will never under any circumstances go far away to school. So, while maintaining perfect loyalty to my friends in the Eastern schools and pledging myself to use every influence to persuade any and all of these Indian youth to take advantage of the grand opportunities offered by these schools, I most earnestly and respectfully urge that these children who can not or will not be persuaded to go East be given a chance here among the mountains of New Mexico to get as broad, comprehensive, and useful education as (aside from the environment of a cultured civilization) they can get in any of our great contemporaries.

I reiterate, give us the equipment and we will get the pupils.

Thanking you for the prompt and favorable responses that my requests and recommendations have met at your hands, I am, very respectfully,

A. H. VIETS, *Superintendent.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

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SANTA FE INDIAN INDUSTRIAL SCHOOL,
Santa Fe, N. Mex., September 4, 1899.

SIR: Referring to your circular office letter "Education," No. 29, of June 26, 1899, asking for data upon which your office will prepare its annual estimate for support of schools, I have the honor to make the following statements:

Number.	For what used.	Character.	Condition.
1	Bakery	Brick	Good.
1	Barn	Frame	Do.
1	Blacksmith shop	do	Fair.
1	Carpenter shop	do	Do.
1	Employees	Brick	Foundation defective.
1	Hen house	do	Good.
1	Hose cart	Frame	Do.
1	Hospital	Brick	Do.
1	Hot house	Frame	Fair.
1	Laundry	Brick	Good.
1	Laundry addition	do	Do.
1	Main building	do	Do.
1	Oil room	do	Do.
1	School building	do	Do.
2	Summer houses	Frame	Do.
1	Tailor and shoe	do	Do.
2	Water closets	do	Fair.
1	Warehouse	Brick	Good.

(1) Present enrollment, 296; average attendance, 258¼.

(2) Probable increase of some 100 or more, if authorized.

(3) *Scholastic population from which school is supported.*—From various pueblos of New Mexico with a school population of 1,400, and from Pima and Navajo agencies, and normal pupils from all Western States and Territories.

(4) Nineteen buildings—9 brick, 10 frame; condition, see above; capacity, 300; value, $49,758.

(5) (*a*) The sewerage is fairly good—10-inch main empties into a dry ravine about 1,000 feet from the school buildings, and is carried by rain floods to the Santa Fe River about 3 miles below Santa Fe, N. Mex.

(*b*) The water supply is furnished by the Water and Improvement Company of Santa Fe from their 10-inch water main, which is laid in front of the school grounds. The school is supplied with good quality of water and in sufficient quantities for the irrigation of 10 acres of ground.

(*c*) Heating is by wood and coal and is as good as can be obtained by that system.

(*d*) Lighting is by kerosene lamps.

One blacksmith shop, one carpenter shop with addition. These are frame buildings and they are a disgrace to the school and should be torn down. In view of the proposed increased capacity and growing needs of this school, I deem it an absolute necessity to have here a trades building and one fully equipped and large enough to teach all the various trades that should be a course of instruction in a school of this kind. For the construction of a building of this kind I most earnestly and urgently recommend that a sum not less than $15,000 be appropriated, for I consider the same to the best interests of this school and the Indian service.

Equipment of shop.—In order to properly equip this shop and to carry on the various industries as desired by your office and myself, it will be absolutely necessary to have therein one 50-horsepower engine, 2 good large boilers, 1 heater and filterer, 160 feet of shafting with sufficient hangers, pulleys, steam gauges, 1 pump, valves, and pressure gauges. In this connection I have also taken into consideration and included in my estimate sufficient piping for conveying steam heat to all necessary buildings on the place. The total cost for the same will not exceed $5,775, and I most respectfully ask your favorable consideration of the same.

School-building extension.—Its capacity will be about 150. There are now about 300 pupils on the ground. It will therefore be necessary to still use the rooms in the main building for school purposes. In view of this fact, I most earnestly and urgently recommend that an addition be made to this school building to increase it to 300 capacity. The cost for the same will be $6,600, which I consider as most conservative, and respectfully ask you to consider the same in a favorable manner.

Dormitory.—One of the great needs of this school is a dormitory building with a capacity of 350 at least. The appropriation for this building should be most seriously considered and without delay.

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I have no hesitancy whatever in saying that it can be filled as soon as completed. Indian Agent Walpole and Inspector of Day Schools Burton assure me that there is not the shadow of a doubt but that it can be filled to overflowing as soon as completed, and they have expressed a willingness to do all in their power to assist me in my efforts to do so.

I most earnestly ask you to give this matter your careful consideration. This school can be increased and it will be increased to meet your full expectations if Congress gives us the assistance the school deserves and is unstinted in its liberality to us. I respectfully ask that a sum not less than $26,000 be appropriated for this building. It will give us a building that we may be proud of and one that will be a credit to the service.

Heating.—There is no possible reason why this school should not be heated with steam, and a plant for that purpose can be established here at a most reasonable cost. It would greatly add to the health, comfort, and convenience of everyone here and be one of the main factors in bringing this school up to the standard desired. I most respectfully request that a sum not less than $8,700 be appropriated for this purpose. I am certain that with this sum and with an economical use of the same I can have the work completed in every respect in a first-class and workmanlike manner.

Repairs and improvements.—In this line there is always a great amount to be done. I urgently recommend that a sum not less than $3,000 be appropriated for this purpose. This I consider a most conservative estimate, and if appropriated it will be most economically expended for the best interests of the school.

Warehouse.—This is a one-story brick building and is in good condition, but is entirely too small to store more than one-fourth of the school supplies. It has been necessary for me to store the supplies in the cellars and lofts of the various buildings, and this has been a constant source of annoyance. A good large addition should be made to this building, and I most urgently and earnestly recommend, for the best interests of this school, that a sum not less than $2,000 be appropriated for this purpose. This building was even too small when the appropriation was for 150 pupils, and now, when the supplies received are for 300 and must be even greater in the future, it will be an absolute impossibility to store the supplies without the greatest annoyance and inconvenience and without occupying rooms that are required for other purposes.

Lighting.—An appropriation of $3,000 for an electric-lighting plant at this school was available during the year ending June 30, 1899, but after making every possible effort it was found that not even an inferior system could be installed for that amount. The necessity for an electric-light plant at this school has been demonstrated to your office, and the increased capacity of the school makes the demand for it even greater now. I most respectfully urge that a sum not less than $4,500 be appropriated for a thorough and complete electric-lighting system, and that this appropriation be immediately available. In connection herewith I wish to state that, if an appropriation for a trades building and equipment of same be made as asked for, only $2,000 be appropriated for electric equipment, as the engines and boilers for the trades building will furnish the power for the electric-lighting system.

Water and sewerage.—A sum not less than $2,000 should be appropriated for this purpose. The yearly expense for sufficient water for irrigation and domestic purposes is $1,500, and the balance ($500) is a most conservative estimate for keeping the same in repair and extending and repairing the sewerage system as required.

RECAPITULATION.

Trades building	$15,000
Equipment of same	5,775
School-building extension	6,600
Dormitory	26,000
Heating	8,700
Repairs	3,000
Warehouse addition	2,000
Lighting	4,500
Water and sewerage	2,000
Total	73,575

A. H. VIETS, *Superintendent.*

The COMMISSIONER OF INDIAN AFFAIRS.

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SURVEYOR-GENERAL.

The following is taken from the annual report of the United States surveyor-general for the district of New Mexico for the fiscal year ending June 30, 1899:

The sum of $10,000 from the appropriation for surveying the public lands for the fiscal year ending June 30, 1899, was apportioned to the district of New Mexico.

Under said apportionment one contract, liability $3,000, was awarded and approved; fourteen sets of special instructions (total liability, $1,327), in lieu of contracts and bonds, providing for resurveys and making connection of private land claims with the public land surveys were awarded, payable from this appropriation.

Six contracts (total liability, $3,025.75) and three sets of special instructions (total liability, $550) were awarded, issued, and approved, payable from the appropriation for the survey of confirmed private land claims in designated States and Territories for the fiscal year ending June 30, 1899.

The total number of miles of different lines established during the year aggregate 1,462 miles 32 chains and 38 links.

Two thousand and fifty-five letters were written during the year, and 416 official letters were received and recorded; plats, transcripts, and field notes compared and transmitted or ready for transmission, 610; special instructions for the survey of public land grants and small-holding claims made out in duplicate, 42; general instructions for the survey of small-holding claims prepared in triplicate, 27; mineral plats prepared, 124; books of field notes examined and corrected, 208.

During the fiscal year 171 tracings and descriptive lists were furnished to the district land offices—Santa Fe, 73; Las Cruces, 92; Roswell, 6; total, 171.

For the fiscal year ending June 30, 1899, $1,600 was deposited on account of the surveys and amended surveys of mining claims; reports were made on 65 placer and load mining claims.

During the said fiscal year mining-district plats were completed for the 77 mining districts in the Territory of New Mexico, which required the making of 138 distinct plats.

In his annual report the surveyor-general says:

During the said fiscal year 46 townships have been platted, showing sections and lots made fractional by mining locations situate therein, the areas computed, and tracings of same furnished to the local land offices and to the General Land Office. There is still a large amount of this work to be done, which should be finished at the earliest practicable date. On account of numerous errors in old mining surveys, it has been found impossible to properly plat and show fractional lots in the numerous townships in which the same are situate, and the same should be taken up at an early date with a view to straightening out all such irregularities, after which the same should be platted and tracings of such township furnished to the local land offices in the different districts of the Territory and to the General Land Office.

I would urge the importance of an appropriation for the restoration of mineral monuments and their proper connections with public surveys and with each other. A majority of the mineral monuments in this district are on unsurveyed ground and mining claims connected with such monuments. Most of such monuments were established many years ago, without regard to their permanency of construction, and were insufficiently witnessed. Many of these monuments have now become obliterated or destroyed, and as the same are the official points of reference by which to fix the locus of all surveyed and patented mining claims, it is of great importance that they should be properly perpetuated, and they should be reestablished permanently and witnessed by connecting them with public surveys, with each other, and with natural objects.

Mining-claim surveys should be examined in the field to insure their correctness, in a like manner as the surveys of public lands and private land claims, to obviate errors and irregularities, and in order that patents to such mining claims shall properly recite claimants' lands, and I believe claimants are entitled to such a proper safeguard. Numerous patents for mining claims in this district recite wrongly the lands which claimants intended to cover, by reason of errors in lines and connections made by deputies during the past thirty years.

The act of Congress approved March 3, 1891, entitled "An act to

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establish a Court of Private Land Claims, and to provide for the settlement of private land claims in certain States and Territories," provides, among other things, that—

No allowance or confirmation of any claim shall confer any right or title to any gold, silver, or quicksilver mines, or mineral of the same, unless the grant claimed affected the donation or sale of such mines or minerals to the grantee, or unless such grantee has become otherwise entitled thereto in law or in equity, but all such mines and minerals shall remain the property of the United States, with the right of working the same, which fact shall be stated in all patents under this act, and no such mines shall be worked on any property confirmed under this act without the consent of the owner of such property, until specifically authorized thereto by an act of Congress hereafter passed.

No act of Congress has yet been passed giving persons the right to work the mines or minerals on grants confirmed under this act, and in view of the fact that a large number of persons in this district have made locations of mining claims upon lands which are or will be included within the boundaries of grants confirmed under said act, in justice to such locators, and to carry out the intentions of said act of March 3, 1891, an act of Congress giving miners the right to work such minerals as are reserved in the confirmation of grants by the said Court of Private Land Claims should be passed at an early date. Such a law would greatly facilitate the development of the natural resources of the Territory within interior boundaries of said grants and materially benefit our population. I request that your office present this matter properly before the next Congress and urge the passage of an act for the purposes as herein recited.

There are still pending before the Court of Private Land Claims 35 cases. Within the 35 grants pending there are between 4,000,000 and 5,000,000 acres of land. Twenty-two private land claims have been surveyed or corrected surveys of the same made under decrees of approval and confirmation by said court during the fiscal year.

There have been upward of 4,000 small-holding claims filed under the provisions of sections 16 and 17 of the act of March 3, 1891. Such of said claims as are located upon townships not heretofore surveyed, and as are found upon proper investigation to be valid, are being surveyed as the lines of public surveys are extended over such townships.

Sixty-three mineral surveys were executed during the fiscal year ending June 30, 1899. Seven mineral surveys were ordered during the year of which no returns have as yet been made. Fifty-one placer mining claims were examined and reported upon during the year.

Forty-nine mineral monuments were established and approved during the fiscal year.

In his estimate for the survey of the public lands, small holdings, and private land claims for the year ending June 30, 1901, the surveyor-general submits the following items, viz:

For survey of public land and "small-holding" claims filed under the act of March 3, 1891, as amended February 21, 1893, $25,000.
For the survey of private land claims, $20,000.

Commenting on the greater necessity for the survey of public lands in the future than has been in several years past, the surveyor-general reports as follows:

The unsurveyed lands in numerous localities in this district are being rapidly settled upon, and as such settlers will continue to locate upon such lands, there will be greater demand for public-land surveys in the future than there has been in the past. There are approximately 2,400 small-holding applications on file in this office for tracts of land in unsurveyed townships and within the boundaries of unconfirmed grants. A majority of said tracts will have to be surveyed when

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the lines of the public surveys are extended over the townships in which they are situate. By reason of the rejection by the Court of Private Land Claims of certain grants and the reduction in area of others, the lines of public surveys will have to be extended over such lines as were formerly embraced in said grants and which have not become public domain by reason of said rejection, which lands are found to be agricultural in character and are occupied in whole or in part by actual settlers.

The boundaries of the small-holding claims of such settlers as are found to lie within unsurveyed townships will have to be established at the time of making the surveys of such townships, and a great many other small-holding claims lying within townships heretofore surveyed will have to be surveyed under per diem contracts, which said contracts are also made payable from the appropriation for the survey of the public lands, and by reason of the amendment of June 27, 1898, to the act of March 3, 1891, which extended the time for such small-holding filings in this office to March 4, 1891. Numerous other small-holding filings are being daily made by claimants who had not heretofore filed on such small-holding tracts, either through ignorance of the law or for the reason that they could not at that time show twenty years' continuous adverse possession, or which small-holding tracts had been covered by grants which have since been rejected by the Court of Private Land Claims, and it is safe to predict that prior to the expiration of the time for filing under said act, as extended by such amendment, there will have been filed in this office upward of 6,000 small-holding claims, there being at the present time over 4,000 of such filings.

Twenty thousand dollars is estimated for the survey of private land claims in New Mexico, from the fact that the docket of this office shows that there are still pending 79 grants in an uncompleted condition, of which number 24 grants have been confirmed by the Court of Private Land Claims and 20 rejected. Of these 24 confirmed grants, 14 are on appeal before the Supreme Court of the United States, and the 20 rejected grants are also on appeal. There are 35 grants untried of this total number of private land claims. A majority will undoubtedly have to be surveyed under confirmation, as the same becomes final, and the said amount of $20,000 will therefore be necessary for the survey of private land claims in New Mexico.

This appropriation for the survey of confirmed private land claims should be made available for the execution of the survey of such grants in the field, the cost of field examination, advertising, and the cost of office work in this office.

UNITED STATES LAND OFFICE.

Statement of business transacted at Clayton, N. Mex., for the fiscal year ending June 30, 1899.

Class of entries.	No.	Acres.	Commissions.	Fees.	Amount.
Sales land at public auction	1	40.00			$50.00
Excess payment on homestead, timber, and other entries and locations	17	51.03			63.77
Original entries under desert-land act	4	399.38			99.85
Final entries desert lands	1	80.00			80.00
Homesteads commuted to cash	5	682.71			853.39
Total cash sales	28	1,253.12			1,157.01
Original homestead entries	259	40,200.25	$1,507.53	$2,500.00	4,057.53
Final homestead entries	87	13,700.83	517.12		517.12
Final timber entries	8	1,280.00		32.00	32.00
Applications to purchase coal lands	1	160.00		3.00	3.00
Soldiers and sailors homestead declaratory statements	1	160.00		3.00	3.00
Amounts received reducing testimony to writing				246.00	246.00
Total all classes	384	56,754.20	2,024.65	2,834.00	6,015.66
Salary, fees, and commissions, register and receiver					3,331.52
Expense of depositing					6.75
Incidental expenses					352.40
Total					3,690.67

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Statement of business transacted at Clayton, N. Mex., etc.—Continued.

County.	Unappropriated and unreserved.			Area reserved.	Area appropriated.	Total area Santa Fe district.	Total number of acres filed upon during fiscal year ending June 30, 1899.
	Surveyed.	Unsurveyed.	Total.				
Bernalillo	1,863,155	420,010	a 2,283,165	942,837	2,480,998	5,707,000	6,119
Colfax	226,941	23,040	b 249,981	.....	1,544,864	1,794,845	3,520
Guadaloupe	1,042,181	10,000	b 1,052,181	.....	537,579	1,589,760	3,052
Mora	404,380	102,160	b 506,540	.....	742,460	1,249,000	9,675
Rio Arriba	1,482,624	799,400	a 2,282,024	840,161	1,136,815	4,259,000	1,904
San Juan	1,023,453	484,440	b 1,507,893	1,958,400	230,707	3,697,000	1,731
San Miguel	835,459	89,860	a 925,319	202,550	1,203,131	2,331,000	10,493
Santa Fe	554,274	60,136	a 614,410	188,900	579,090	1,382,400	4,453
Socorro	1,129,743	128,080	a 1,257,823	.....	890,177	2,148,000	160
Taos	332,862	330,052	a 662,914	119,931	687,155	1,470,000	237
Valencia	2,389,212	313,620	a 2,702,832	634,563	2,511,605	5,849,000	2,600
Total	11,284,284	2,760,798	14,045,082	4,887,342	12,544,581	31,477,005	43,944

a Mountainous timber and grazing. b Grazing and agricultural.

Lincoln land district, Roswell, N. Mex., June 30, 1899.

County.	Area unappropriated and unreserved.			Area reserved.	Total area disposed of.	Area of land of the county in land district.	Area of land disposed of during the fiscal year, 1899.	Number of acres entered under homestead laws, 1899.
	Surveyed.	Unserveyed.	Total.					
Chaves	4,879,548	2,120,353	6,999,901	3,280	526,339	7,529,520	35,906	19,511
Eddy	1,798,435	2,253,741	4,052,176	6,300	261,524	4,320,000	13,818	8,757
Guadaloupe	6,720	.....	6,720	.....	1,280	8,000	.....	.....
Lincoln	2,163,341	118,354	2,281,695	91,560	313,036	2,686,291	7,279	7,259
Otero	222,909	1,377,549	1,600,458	208,440	12,291	1,821,189	803	800
Valencia	145,040	.....	145,040	.....	12,960	15,800	.....	.....
Total	9,215,993	5,869,997	15,085,990	309,580	1,127,430	16,380,800	57,806	36,327

Las Cruces land district, Las Cruces, N. Mex., June 30, 1899.

County.	Area unappropriated and unsurveyed.			Area reserved.	Total area disposed of.	Area land surface in counties.
	Surveyed.	Unsurveyed.	Total.			
Donna Ana	4,140,026	656,594	4,796,620	335,378	141,002	5,253,000
Grant	3,931,228	1,388,882	5,320,110	7,414	658,476	5,986,000
Lincoln	66,099	251,825	317,924	70,000	12,076	400,000
Sierra	1,524,303	274,379	1,798,682	74,875	99,443	1,873,000
Socorro	5,191,078	2,076,501	7,267,579	337,459	132,962	7,738,000
Total	14,852,734	4,648,181	19,500,915	825,126	1,043,959	21,250,000

	Acres.
Located under homestead law	36,166.69
Located under desert-land law	2,037.27
Located mineral lands	599,908.00

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UNITED STATES COURT OF PRIVATE LAND CLAIMS.

SANTA FE, N. MEX., *September 11, 1899.*

MY DEAR SIR: I am in receipt of your letter of September 8. Pursuant thereto I take pleasure in inclosing herewith tabulated statements of the work of the Court of Private Land Claims during the year ending September 8, 1899, and also showing status of the remaining business on the New Mexico docket of that court. I regret that this data has not reached you sooner, but the receipt of your letter was the first intimation which this office had that it was desired. In addition, the summer session of the court adjourned only last Tuesday, so that the delay enables us to furnish you with a complete statement of the work for the year, whereas a statement rendered earlier would have been necessarily incomplete.

Very respectfully,

WM. H. POPE,
Assistant United States Attorney.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

(One inclosure.)

SCHEDULE NO. 1.

List of cases in the New Mexico district decided by the Court of Private Land Claims during the year from October 1, 1898, up to and including October 1, 1899.

P. L. C. No.	Name of grant.	Acreage. Claimed.	Confirmed.	Rejected.
71	Tres Alamosa	43,384.64		43,384.64
127	Town of Socorro	843,259.00		843,259.00
132	Reyes Pacheco	600.00		600.00
137	Santo Tomas de Iturbide	8,680.00	6,680.00	
138	Jose Manuel Sanchez Baca	4,340.00	4,340.00	
143	José Sutton	69,445.00		69,445.00
149	Fernando de Taos	1,000.00	1,000.00	
150–193	Refugio Colony	26,130.00	26,130.00	
151	Mesilla Colony	17,361.00	17,361.00	
152	Estancia	415,036.00		415,036.00
165–206	Abo Mine	16,000.00		16,000.00
178	Lo de Basquez	76,000.00		76,000.00
194	Santa Cruz	64,000.00	1,000.00	63,000.00
251	Diego de Belasco	5,000.00		5,000.00
256	Santo Toribio de Jemez	100,000.00		100,000.00
	Total	1,690,235.64	58,511.00	1,631,724.64

SCHEDULE NO. 2.

Surveys of grants approved in New Mexico district during the year ending October 1, 1899.

P. L. C. No.	Name of grant.	Acreage in survey.
6	Sebastian de Vargas	13,434.28
30	Piedra Lumbre	49,749.89
35	Jacona	6,952.84
51, 106	Ranchos de Albuquerque	35,084.78
54	Galisteo	260.79
64	San Clemente	37,099.29
73	Pajarito	28,724.23
85	Salvador Gonzales	202.82
133	Pueblo of Laguna	17,328.91
214, 243	Cieneguillo	3,202.79
217, 258	Town of Bernalillo	3,404.67
	Total	195,445.28

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SCHEDULE No. 3.

Cases on docket of New Mexico district not finally disposed of; also status of each of said cases.

A.—PENDING FOR PRIMARY DETERMINATION.

P. L. C. No.	Name of grant.	Acreage claimed.	Remarks.
8	Town of Albuquerque	17,361	Remanded by Supreme Court (171 U. S., 685).
25 60 198	San Miguel del Bado	3,000	This represents estimated area of allotments. Claim to unallotted lands rejected (167 U. S., 278).
109	Conejos	2,500,000	Mostly in Colorado.
211	Santo Domingo de Cundiyo		No estimate possible under description given.
212	Pueblo de Quemado	288,000	
215	Bishops Ranch	600	
227	Jose Ignacio Alari		Do.
228	Roque Jacinto Jaramillo		Same; partially tried.
257 263	San Jose de Garcia		No estimate possible under description given.
260	Juan Joseph Moreno		Do.
262	Francisco Xavier Romero		Do.
270	Sitio de Navajo		Do.
	Total	2,808,961	

B.—CASES TRIED, SUBMITTED, AND UNDER ADVISEMENT BY THE COURT IN NEW MEXICO DISTRICT.

P. L. C. No.	Name of grant.	Acreage claimed.
144 252	San Pablo y Nacimiento	131,000
168	Santa Teresa	9,681
203 213	San Joaquin del Nacimiento	131,725
	Total	272,406

C.—CASES IN WHICH MOTIONS FOR REHEARING ARE PENDING IN NEW MEXICO DISTRICT.

P. L. C. No.	Name of grant.	Acreage claimed.	Mover.
165 206	Abo mine	16,000	Claimants.

D.—GRANTS PENDING ON SURVEY IN NEW MEXICO DISTRICT.

P. L. C. No.	Name of grant.	Estimated acreage confirmed.
5	Arroyo Hondo	20,171
15	Antonio Sedillo	86,606.21
16	Gijosa	15,540.97
17	Canada de Santa Clara	1,343.03
24	Dona Ana Bend	29,323
31	Luis Jaramillo	18,000
43	Polvadera	35,000
55	Cevilleta	285,431.36
67	Felipe Tafoya	4,340
70	Las Lagunitas	43,653.06
75	San Mateo Spring	4,340
116	Talaya Hill	500
122 148	Penasco Largo	665
157	El Ranchito	8,000
179	Juan Bautista Valdez	1,200
205	Canada de Cochiti	15,000
229	Angostura	2,319
267	Santa Rosa de Cubero	5,000
272	Miguel and Santiago Montoya	2,600
273	Lo de Padilla	27,000
	Total	606,082.60

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Cases on docket of New Mexico district not finally disposed of, etc.—Continued.

E.—CASES ON APPEAL FROM NEW MEXICO DISTRICT.

P. L. C. No.	Name of grant.	Acreage claimed.	By whom appealed.
20	Nerio Antonio Montoya	3,633	Claimants.
36	Bairds Ranch	33,696	Do.
44			
128			
135	Las Animas	4,096,340	Do.
154			
216			
71	Tres Alamos	43,384.64	Do.
87	Sierra Mosca	115,200	United States.
91			
183	Alamitos	2,500	Do.
99			
153	Petaca	186,977	Do.
233			
101	Ojo del Apache	47,748	Claimants.
108	Cebolla	27,000	United States.
111	Real de Dolores	17,361	Claimants.
112	Cuyamungue	5,000	United States.
130			
182	San Jose Spring	100,000	Claimants.
132	Reyes Pacheco	600	Do.
134			
184	Santo Domingo and San Felipe	20,000	Do.
185			
142			
204	Vallecito de Lobato	114,400	Do.
236			
152	Estancia	415,036	Do.
173	Embudo	25,000	Do.
264	Bartolome Sanchez	5,000	United States.
269	Las Huertas	150,000	Claimants.
274	Antonio Gutierrez	12,000	United States.
275	Joaquin Sedillo	8,000	Do.
	Total	5,428,876.64	

F.—GRANTS CONFIRMED, BUT CONFIRMATION NOT YET FINAL.

P. L. C. No.	Name of grant.	Acreage confirmed.
74	Canon de Carnue	1,000
107	Canon de Chama	2,736
114	San Jose del Ensinal	12,207
130	Jose Manuel Sanchez Baca	4,340
137	Santo Tomas de Iturbide	6,680
149	Fernando de Taos	1,000
150	Refugio Colony	26,130
193		
151	Mesilla Colony	17,361
194	Santa Cruz	1,000
	Total	72,454

RECAPITULATION.

Cases.	Number.	Acreage.
Not tried	12	2,808,961
Under advisement	3	272,406
On motion for rehearing	1	16,000
On survey	20	606,032.60
On appeal	21	5,428,876.64
Confirmation not final	9	72,454
Total pending in New Mexico district	66	9,204,730.24

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CACTUS OF NEW MEXICO.

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DEAR SIR: I have the honor to transmit herewith my report of the condition of the cattle industry in the Territory of New Mexico for the year ending June 30, 1899:

The winter of 1898–99 was phenomenally severe and destructive to stock throughout the entire Western portion of the Union. New Mexico, in common with the rest of the range country, suffered, but not to the extent experienced in those sections exposed to the full fury of the storms and blizzards sweeping down from Manitoba, unobstructed until the northern boundary of New Mexico is reached, where the mountains trending to the eastward deflect the storms in that direction and they develop into the much dreaded northers of Texas, thus protecting our stock from the rigors of climate that caused such havoc among range cattle during the winter last past. Those that perished were mostly old and weak cows with young calves, during the late and very dry spring following. Taking the Territory at large, the loss was about 7 per cent, varying in different sections owing to local conditions. All, however, were thin in flesh, and not in shape to be handled, and for this reason very little trading was done during the latter part of the year, and the movement of cattle out of New Mexico for any purpose was about 70,000 head less than it was during the same period in 1897.

Since the summer rains set in, making feed and water plenty, and assuring a supply for the balance of the year, their recuperation has been wonderful, and by the time the forage crops have been harvested, the steers being well graded and perfectly healthy, cattle will be in fine condition to be handled by feeders, the most successful of whom requiring for their purposes certain approved forms and qualities in their build and breeding that are known to give the most satisfactory results in the finished product, and accepting in their selection such only and none other, determined the most progressive of our cattlemen to supply the demand for the class required, and to that end have for some time past, and more noticeably during the present year, been introducing into their herds the very best strains of beef-producing blood to be found for that purpose. More than two-thirds of the steer holdings, which are nearly all ones and twos, have not yet been disposed of. They are well graded and will make feeders that will be profitable to handle, and are taking on flesh every day, grazing on the rich pastures our wonderful gramma grass affords, and which now just seeding, besides giving growth, has also a fattening quality almost equal to grain, and by the time corn is in hand for feeding will be in the best possible condition to be finished for the slaughter. Our cattlemen expect and are entitled to receive remunerative prices for their product, and the present outlook is that they will.

The attempt to control prices of cattle in this Territory earlier in the season by syndicate methods did not greatly prevail, and with the immense corn crop that is now assured the demand for cattle to consume it will be constant and strong.

The fact that a great shortage exists in that class of property is absolute, and cattlemen can confidently figure for an increased demand for their product for years to come, and will best subserve their own interest by producing that class of cattle which will give the best results when placed in the feed lot.

No losses of moment, except those before mentioned, caused by severe weather, have occurred. Fatal contagion is unknown.

The united and vigorous action by cattlemen in those sections where cover for vermin is most abundant have greatly reduced losses among stock heretofore caused by the preying of wolves on young calves, and inspectors from all portions of the Territory report that the depredations of the rustling element in burning brands and driving stolen cattle out of the Territory has (owing to the repressive measures taken against them through the operations of this board) been greatly reduced; many of them have been caught and convicted, and are now undergoing punishment, while a greater number have fled the country, fugitives from justice.

In my report for the year ending June 30, 1898, attention was called to the capabilities as a stock-grazing country of the great plains of eastern and southeastern New Mexico, which had been hitherto undeveloped, a gigantic trust now being promoted, the scope of which is to include the capital syndicate, holding in excess of 3,000,000 acres of land in Texas and extending over 100 miles along the eastern border of New Mexico, and also to include nearly all of this whole beforementioned section, some 25,000,000 acres of public land in New Mexico, now being rapidly filled up by a valuable class of frontier cattlemen and their families, each owning small bunches of stock and who are exploiting its natural resources as a stock-breeding region, developing water by means of wells and windmills for their horses and cattle and domestic purposes.

This scheme, if consummated, will be disastrous for all these people, as they will

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be overwhelmed with the herds turned loose on them, and must either abandon their holdings or submit to the terms made them by the trust, and it is clearly against public policy that this should be so, as a country occupied by people who make homes and pay their taxes are of more value to the State than are these grasping combinations, which notoriously and systematically avoid doing.

Reports from inspectors and leading cattlemen throughout the Territory are all to the effect that the present conditions of range and cattle are all that could be expected or desired; that the calf crop is much better than it seemed possible that it could be after the stress the exceptionally hard winter and dry spring put on the range stock; that a very decided improvement in the grade of young stock is shown throughout the Territory; that their owners being sure of their increased value and better protection are giving them closer and more intelligent attention than they have hitherto received.

From the most reliable data attainable there are in this Territory about 1,200,000 head of range cattle, out of which the steers are pretty closely sold. During the year ending June 30, 1899, 165,787 were sold and removed from the Territory—mostly steers to be matured and prepared for slaughter, the money value of which at current rates approximate $4,000,000. This, there is every reason to believe, will be increased by one-half at the end of the fiscal year, June 30, 1900.

All of which is respectfully submitted.

J. A. La Rue,
Secretary of Cattle Board, New Mexico.

Governor Miguel A. Otero,
Santa Fe, N. Mex.

REPORT OF SHEEP SANITARY BOARD.

Sir: We beg leave to submit to you the report of the sheep sanitary board of New Mexico for the year 1899;

Sheep growing is undoubtedly the principal industry of our Territory, and for the protection of this industry the sheep sanitary board was created by an act of the legislature of this Territory in 1897. Prior to this act the law in effect in regard to marking and branding and the illegal handling of sheep, and especially as to the treatment of the disease known as scab or scabies, was so defective as to be of practically but little value. During the first two years of the board's existence a great deal was accomplished in making growers become acquainted with the law in regard to dipping their sheep for scab, the necessary ingredients composing the dip, and the manner in which it should be used; and also in the creation of a corps of inspectors to enforce the statute and the rules and regulations of the board. The statute of 1897, however, was also found to be defective in quite a number of particulars, chief of which was inadequate provision for providing necessary funds with which to carry on the work contemplated. These defects have been remedied by the legislature of 1899, and the law is now in such shape that a great deal of good is expected to be accomplished during the next two years. Copies of this act of 1899 and of the rules and regulations of the board have been placed in the hands of every sheep grower in the Territory of whom the board has knowledge, both in English and Spanish.

During the first part of the present year a general drought prevailed throughout the Territory, and the dipping and quarantining of sheep were suspended, as their continuance during a time of scarcity of grass would certainly have caused an immense loss. Rains have, however, prevailed for some time, and a general order has been made by the board, a copy of which, either in Spanish or English, has been mailed to every sheep grower in the Territory, providing that all flocks shall be dipped before the 15th of September, and again before the 15th of December. This order the board will through its inspectors strictly enforce, and it is believed that in the spring of 1900 the sheep in this Territory will be quite clean of scab. A copy of that order is inclosed herewith.

The Department of Agriculture of the United States has recently promulgated a regulation providing that any sheep affected with scab or scabies, or sheep that have come in contact with those so affected, shall not be allowed shipment from one State or Territory into another unless they have first been dipped in one of two mixtures, the formulas for which are prescribed by the Department. Of the two formulas specified the lime and sulphur mixture is practically the same as that set out in the rules and regulations of the board, except that it is not quite as strong. The board has had a large number of copies of this regulation printed, both in English and Spanish, together with a statement of the board that it

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intends to assist the Department of Agriculture in every manner possible in enforcing this order, and with a further order of the board that all sheep shall be dipped as before stated herein, with one of the formulas prescribed by the Department of Agriculture. It is the intention of the board, and it has so instructed its inspectors, to see that all sheep growers comply with this regulation in every particular, and it is our desire to cooperate with the Department of Agriculture and assist in every manner in our power in destroying and curing the disease known as scab or scabies.

The natural adaptability and advantage of the Territory of New Mexico for sheep growing are unsurpassed by any country or section of country in the world. The only disease we have to contend with is scab, before referred to, foot rot and other diseases being unknown. With scab eliminated, as the board hopes and intends that it shall be, nothing can interfere with the rapid development of this industry to five or six times its present great magnitude, and the consequent increase of richness and prosperity to the Territory.

From what data we have, we can safely say we have between 4,500,000 and 5,000,000 of sheep, which produce on an average of not less than 5½ to 6 pounds of wool each, and this average is constantly being increased by the grading up of our sheep by the importation of fine rams.

At the present time growers are rapidly having their marks recorded with the board, which give them exclusive right to the use of their mark and fire brand as recorded, and will enable the board through its inspectors to quickly identify and return stray or stolen sheep, two flocks of stray sheep having been by this means restored to their proper owners within the last three months. The cutting of a flock or the stealing of sheep will, under our statute in regard to defacing or mutilating marks, soon be a thing of the past. The board is cooperating with the authorities in seeing that all sheep thieves are prosecuted and an owner of sheep in this Territory will soon be as safe from any trouble of this nature as owners who keep their flocks in pastures in Eastern States.

The following is a list of our range and shipping inspectors at the present time: Crestino Griego, Casa Salazar; Francisco Montoya, Bernalillo; William McIntosh, Chilili; Ricardo Lewis, Albuquerque; H. M. Miller, Roswell; A. T. Gunther, Lower Penasco; C. C. Martin, Roswell; S. Floersheim, Springer; H. C. Abbott, Springer; Oscar Troy, Raton; W. Kelly, Catskill; C. W. Lewis, Eddy; J. M. Abercrombie, Anton Chico; Antonio Jose Aguilar, Anton Chico; Mariano Montoya, Revuelto; John Coleman, Liberty; David Crespin, Los Colonias; L. C. Churchill, Puerto de Luna; M. F. Davidson, Richardson; L. B. Walters, Lincoln; Epimenio Martinez, Wagonmound; G. W. Bond, Wagonmound; S. E. Ruckner, Watrous; Pedro Aguilar, Tularosa; T. J. Key, Tierra Amarilla; Sixto Chavez, El Rito; Manuel Gomez, Lumberton; Charles Pinkney, Farmington; Rafael Gallegos, Las Vegas; Carlos Martinez, Chaparito; J. E. Whitmore, Gallinas Springs; Nicolas T. Cordova, Las Vegas; Fecundo Pino, Galisteo; Andres C. de Baca, Romero; John Pflueger, Lamay; Frank Bond, Espanola; Melcor Silva, Monticello; B. F. Parks, Lave Valley; Manuel S. Pino, Datil; H. A. Brachvogel, Cienega; Matias Contreras, Lajoya; J. S. McTavish, Magdalena; Albert G. Muller, Taos; Juan A. Bernal, Cerro; T. A. Gray, Clayton; Rafael Tixier, Bueyeros; J. C. Martinez, Folsom; Sylvestre Miribal, San Rafael; Jose Salazar, Peralta; Antonio A. Salas, Pinos Wells.

The sheep sanitary board as at present constituted consists of Solomon Luna, president, Los Lunas; W. S. Prager, vice-president, Roswell; and Harry W. Kelly, Las Vegas, N. Mex., and Harry F. Lee, secretary, with office of board at Albuquerque, N. Mex.

IMPORTANT ORDER.

ALBUQUERQUE, N. MEX., *August 19, 1899.*

To the Sheep Growers of the Territory of New Mexico:

You are hereby notified that all sheep which have not been dipped since the 1st of June, 1899, must be dipped between now and the 15th of September, using one of the formulas prescribed by the United States Government as set out in the regulations below, or with the lime and sulphur formula heretofore prescribed by this board in its rules and regulations. You are also notified that all sheep will be required to be dipped again after the 15th of October and before the 15th of December, 1899.

Any sheep owner who fails or neglects to comply with this order will be subject to a fine of 1 cent for each and every head not so dipped, and the respective inspectors for the various counties have been ordered to strictly enforce this order and to collect such fines, and to have all sheep not so dipped as above ordered

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dipped at owner's expense. And in event of any flock still showing scab after having been dipped twice, the dipping must be continued until the scab is entirely cured.

The circular from the United States Department is as follows:

UNITED STATES DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., July 20, 1899.

Whereas the shipment of live stock affected with any contagious, infectious, or communicable disease from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State, is prohibited by the act of Congress approved May 29, 1884; and

Whereas the contagious disease of sheep known as scabies, or scab, exists in many parts of the United States, due notice of which was given in the Department order of June 18, 1897; and

Whereas some of the preparations in which diseased sheep have been dipped by owners and stock-yard companies with the object of destroying the contagion and making legal the shipment of said sheep in interstate trade have proved inefficient, and said sheep have disseminated the contagion notwithstanding such treatment; and

Whereas the damage and losses from scabies in sheep have been in some sections very heavy and discouraging to those engaged in the sheep industry:

It is ordered that from and after August 10, 1899, no sheep affected with scabies, and no sheep which have been in contact with others so affected, shall be allowed shipment from one State or Territory to another, or from any State into the District of Columbia, or from the District into any State, unless said sheep shall have first been dipped in a mixture approved by this Department.

The dips now approved are—

1. The tobacco and sulphur dip, made with sufficient extract of tobacco to give a mixture not containing less than five one-hundredths of 1 per cent of nicotine and 2 per cent flowers of sulphur.

2. The lime and sulphur dip, made with 8 pounds of unslaked lime and 24 pounds of flowers of sulphur to 100 gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all sediment allowed to subside before the liquid is placed in the dipping vat.

The owner of the sheep is privileged to choose which one of the above-mentioned dips shall be used for his animals. The Department will instruct inspectors to enforce due care in dipping sheep, but it assumes no responsibility for loss or damage to such animals, and persons who wish to avoid any risks that may be incident to dipping at the stock yards should see that their sheep are free from disease before they are shipped to market.

J. H. BRIGHAM, *Acting Secretary.*

The above regulation has recently been sent out by the United States and is now being strictly enforced, and all persons who fail to dip their sheep in exact accordance with the above regulation and in every manner fully comply therewith make themselves liable to the United States. Sheep men are notified and warned that they must strictly comply with the above regulations or they will be liable for damages.

SOLOMON LUNA,
President Sheep Sanitary Board, New Mexico.
HARRY F. LEE,
Secretary, Albuquerque, N. Mex.

Hon. M. A. OTERO,
Governor of New Mexico.

SHEEP.

That "the hoof of the sheep is golden" has been demonstrated conclusively in New Mexico. Not even Australia, renowned the world over as the sheep-grower's paradise, can surpass New Mexico in its advantages as an ideal sheep breeding and wool growing section. The master hand of nature lavishly supplied our Territory with everything requisite for the successful pursuit of the sheep and wool industry. Nature endowed her with a peerless climate, neither hot

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nor cold, yet overflowing with sunshine from January to December, producing an atmosphere pure, ozone laden, and invigorating.

Her grazing lands extend from the plains and mesas to the top of the mountains, 10,000 feet high and bountifully covered with nature's choicest nourishment—gramma grass—which retains to a surprising degree its succulence and nutrition, even when only cured by wind and weather where it grew, with no assistance from mankind.

New Mexico's natural adaptability to sheep raising and wool growing was recognized by the Spaniards when they settled in this section about three hundred years ago, and they introduced large numbers of Merino sheep, which soon became the principal support of the people, furnishing them with food and raiment. Since that time this industry has a prominent position in the Territory and it is to-day, as it has been for many years past, the most important and profitable in New Mexico. At this time there are owned in the Territory of New Mexico over 4,000,000 head of sheep, including the lambs grown this year, and, with the exception of one State possessing many similar advantages, our Territory towers above all other States and Territories in the number of sheep owned. The original stock was of the Spanish Merino type of sheep, and from lack of fine-bred rams to keep up and improve the strain they gradually deteriorated in character until they became a class unto themselves, displaying more of the characteristics of wild than of domestic animals. This trait developed in these sheep an ability to hunt for their food and enable them to subsist upon the scanty herbage and to live without water for many days, whenever conditions demanded or necessitated such modes of living. To-day, though improved by the best blooded stock to be found, they still possess these desirable characteristics.

The ewes make splendid mothers, caring for their lambs in a manner unequaled by any other breed of sheep and fearlessly defending them against attack by carnivorous wild animals. Their fecundity is also remarkable, and there is always a high percentage of lambs born, running up, in some flocks, over 100 per cent. Possessing such qualities, the increase and growth of the flocks is very rapid.

With their inherited and acquired knowledge of the sheep business, it would be difficult to find in any other section of the country a class of growers who can excel the New Mexican sheep men in the intelligent and economical management of their herds. In the improvement of their flocks they have experimented with different breeds, and the results have convinced our best sheep men that, for the conditions prevailing in New Mexico, the American Merino (the Delaine or Rambouillet types) is superior to all other breeds tried, and for the purpose of raising the standard of their sheep they have imported many fine-bred rams from Vermont, Pennsylvania, Ohio, and Michigan, for some of which as high as $100 per head was paid. The fine types are peculiarly suited to New Mexico, not simply because they are wool and mutton sheep, but for the reason that sheep in our Territory are grazed upon open ranges, and it is therefore essential that the sheep should possess the quality of herding together, and this is a leading trait of the Merino. Some of the long-wooled mutton breeds have been tried, but as these sheep will not stay "bunched" while feeding it is very difficult to herd on the open ranges, and their decided tendency to wander off singly demands unceasing vigilance as well as hard and tiresome work on the part of the herders to hold them together, while the danger of loss from this cause is always

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serious, and these sheep are not well suited, therefore, for open-range grazing.

The Rambouillets, however, being of pure Merino descent, have inherited the flocking qualities of their ancestors and they are a desirable class for range work. They are free from wrinkles, the wool produced is the finest quality, and they make excellent sheep for mutton purposes. We do not know whether it is due to the climate, to the gramma grass, or to the breeding, yet the fact remains that the mutton from New Mexico sheep possesses a sweetness, tenderness, and delicacy of flavor that places them easily in the front rank as choice mutton sheep. These qualities are so well known that "feeders" prefer them to any others, and the demand for them for feeding pens is so great that the growers are only partially able to supply it. Nearly a million head of sheep are annually taken to Colorado, Nebraska, Kansas, Missouri, and Illinois to be fattened for market.

Fort Collins, Colo., received large numbers of them, and the high price the feeders obtain for their New Mexico sheep demonstrates their superiority as mutton producers. The sheep make splendid feeders, as they will eagerly and greedily feed upon alfalfa, oats, corn, wheat screenings, etc., and take on weight very rapidly. Their faculty for adapting themselves to existing conditions makes them very desirable animals for feeders, as they are as much at home in the pens as they are upon the ranges. Sheep are also being fattened around Eddy, N. Mex., upon the sugar-beet pulp, and the sugar factory there is now able to advantageously dispose of what was formerly a waste product. Results from pulp feeding have been very satisfactory, particularly in the case of old ewes. The pulp furnishes them with an abundant supply of rich milk, and they are thus enabled to raise strong, well-developed lambs.

No business offers more profitable returns than does the sheep-raising and wool-growing business of New Mexico at the present time. The cost of running the sheep for a year is about 30 cents per head, which covers the expense of herding, lambing, shearing, dipping, taxes, etc. The cost of shearing amounts to 2½ to 4 cents per head, according to the class of sheep shorn. The flocks are usually run in bands of 3,000 to 5,000. The people of New Mexico are unsurpassed in the management of sheep herds. It is no unusual thing for them to take sheep on shares, agreeing to return double the number of young and healthy ewes at the end of five years, with a considerable amount of wool annually; and often, after the five years, the party, on repaying, has double or treble the original number left for himself. The flocks require three men, or two men and a boy, and two or three dogs, and, when the same man has three or more flocks, another man of experience as overseer. Each flock also has a donkey and camp equipage, which, with the rations, are carried on the donkey. The sheep are grazed from place to place within the range. The men and dogs constantly remain with the sheep during the whole year.

A few years ago sheep could be bought for 75 cents per head, and even at that price there were few buyers. To-day ewes are selling freely from $3 to $4 per head; yearlings (wethers), $2.50 to $2.75; two years and up (wethers), $3 to $3.25, and six months' old lambs from $1.75 to $2.25 per head.

One of the prominent sheep men of New Mexico, who started in business about twenty years ago with practically no capital, has just disposed of his business and finds himself worth over $100,000, not-

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withstanding the fact that he, in common with the other sheep men, lost money for several years during the agitation for and the life of the obnoxious Wilson bill. The following statement will briefly show about what can be done in the sheep and wool industry in the Territory of New Mexico. This is the way it works:

4,000 ewes, at $3 per head	$12,000	
Expenses for one year, say, 50 cents per head	2,000	
Total cost		$14,000

At the end of one year you have:

3,800 ewes (5 per cent loss allowed), at $3	$11,400	
21,000 pounds of wool, at 12 cents	2,520	
3,100 lambs, at $2	6,200	
		20,120
Profit		6,120

Fifty per cent on the original outlay is a handsome return from any enterprise, and we believe we do not err when we reiterate that the people engaged in sheep husbandry in New Mexico are following the most profitable business in the West to-day, and as long as a protective tariff guards their interests the prospects and outlook for the future are certainly very bright for the sheep men, and the prosperity of the Territory is in a very large measure commensurate with the success enjoyed by those who are devoting their capital, brains, and energies to this important industry.

WOOL.

The wool clip of the Territory will amount to fully 18,000,000 pounds this year. A few years ago the average weight per fleece was very low, but now, owing to improved breeding, it will amount to a little over 5 pounds per head. The wool grown in New Mexico is of a diversified character, scaling from the finest Delaine-Merino to the coarsest carpet. The improvement in the grade of the wools has been coincident with the improvement in the sheep, and the growers are still exerting themselves in the laudable ambition of bringing their flocks and wool up to a still higher standard of quality. Many years are consumed in breeding the coarse-wooled stock up to the desired Merino plane, and so to-day, while clips are shorn that will compare favorably with any in the United States, the majority of them are not uniform in grade, but will contain fleeces producing sorts running from fine to carpet wool. The lambs of each succeeding year produce a finer grade of wool, and in time, if the growers continue to use fine Merino rams, the wool clip of New Mexico will be composed of fleeces uniform in grade and of choice character.

There is an ever-increasing scarcity of fine wool in the world, due to the crossing of the fine-wooled flocks with the large-framed, coarse, long-wooled breeds. The tendency to breed exclusively for a large carcass has amounted almost to a craze all over the globe, from which the New Mexican growers have been comparatively free. They have again displayed their intelligence by directing their efforts solely to the production of fine-wooled mutton sheep, and the certain advance of fine wools to a high point will amply reward them for their foresight and labors.

The following tables, furnished by one of the large wool-scouring

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plants situated at Las Vegas, indicate the diversity in the wool clips grown in the Territory:

	Per cent.
A clip of 40,000 pounds of grease wool yielded:	
Scoured fine wool	65
Scoured fine medium	35
A clip of 90,000 grease pounds yielded:	
Scoured fine and fine medium	97
Quarter-blood	2
Blanket	1
A clip of 77,000 grease pounds yielded:	
Scoured fine and fine medium	90
Quarter-blood	9
Blanket	1
A clip of 31,000 grease pounds yielded:	
Scoured fine medium	2
Three-eighths	59
Quarter-blood	17
Blanket	18
Carpet	4
A clip of 20,000 grease pounds yielded:	
Scoured three-eighths	43
Quarter-blood	31
Blanket	16
Carpet	10

There are many clips that will show a much greater percentage of the low sorts (blanket and carpet) than is indicated in the tables quoted above.

The advance in the price of wool has kept step with that of the sheep. In 1896, when sheep were only worth 75 cents per head, the price of wool touched its lowest point. Eastern commission houses even refused to make any advance on grease wool, and owners were offered 3 to 5 cents per pound for the fine clips. To-day these wools are worth 11½ to 14 cents per pound, and the importing price of wool has not yet been reached by 2 to 3 cents per pound. Light shrinking wools sold as high as 17½ cents last fall; all of which tends to prove that a protective tariff on wool is neither a myth nor a fallacy, but is essential and beneficial to the wool industry of New Mexico, as elsewhere in the United States.

The production of such a vast quantity of wool has brought within our borders another important industry, the business of scouring wool, as well as of sorting it and otherwise preparing it for the manufacturers' use. Three large plants have been erected at Las Vegas. There is also one located at Albuquerque. There is in addition to these a scouring plant at Trinidad, Colo., across the New Mexican line, which handles large quantities of wool grown in northern and northeastern New Mexico. The town of Eddy is at present contemplating the erection of a wool-scouring mill, and if the water proves suitable for this business they hope to have it running by next wool season.

These scouring mills have been the prominent factor in securing for the growers full prices for their clips. The benefits they confer upon the sheep men are numerous. Their presence and anxiety to secure wool has developed a competition among buyers that has reacted to the growers' benefit. The scouring of wool at home results in a big saving in freight charges, as all the grease and sand carried by the wool is eliminated, and transportation charges are only paid on clean wool. They are a school for the growers, as they teach them the shrinkage of the wool and the percentage of the various sorts taken from it; and, as all wool is bought and sold on a scoured basis,

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it is very necessary that they should possess this information, as it enables them to dispose of their products intelligently and to good advantage. If wool is consigned to an Eastern commission house to be sold, the charges are less for handling scoured wool than for grease wool, the growers have more money to spend at home, and their support of the scouring mills keeps employed in New Mexico much capital and many hands. The benefits of scouring mills to a community are fully illustrated in the case of Las Vegas, which is to-day the best wool market in the Southwest, and wool is shipped to that point from the most distant parts of the Territory, the growers being attracted there by its excellent outlet for wool. If the grower sells his wool to an Eastern buyer in the grease he has to pay the freight as well as the charge for scouring the wool, as he well knows, and if he can save the money paid for hauling the grease and dirt in his wool, it is certainly to his interest to do so. It is also better for the Territory to have this work done here, as it encourages an important industry here and adds to the wealth of New Mexico. That the conversion of the wool just as it comes from the sheep's back into the condition required by the manufacturers has been remunerative to the growers is demonstrated by the following letters, which were received, with numerous others of similar import, by one of the leading scouring mills at Las Vegas, N. Mex.:

PUERTO DE LUNA, N. MEX., *January 17, 1898.*

——— ———:

In reply to your letter of the 10th instant, I have to say that I want you to scour my wool, as you have done for many years.

I have learned by experience that the reputation of your company in the wool market of the East is such that wool sorted and scoured by it sells for the highest market price; and in regard to my wool, when you scour it, and I see the market quotations for scoured wools, I know exactly what it is worth, and I believe the owners of fine wool can realize more by scouring than selling in the grease. For instance, two years ago, when you scoured it, I realized, after all expenses had been paid, $1,668.48 over the highest price I was offered for it in the grease.

I often hear it asserted that in New Mexico and Arizona we can not raise such wool as is produced in Montana and Northern States, and it may be true; but, nevertheless, I have received for every clip you have scoured the past six years the same price, and I think I owe something to your company for the thorough manner it was sorted, scoured, and put up, and I am going to stay with you.

Yours, truly,

J. G. CLANCEY.

P. S.—I hope to have over 100,000 pounds this coming clip.

CHILILI, N. MEX., *January 17, 1898.*

——— ———:

We are very well satisfied with the manner in which you handled our clip last year and the price you got for us. It is our intention to place this spring's clip, which will be in the neighborhood of 200,000 pounds, in your hands again, as we believe all fine wools should be handled through a scouring mill, as there is a big saving in freight and in the commission charged for selling the wool. We are convinced that we can get more money from our clip in this manner than if it is handled or disposed of in any other way.

Yours, truly, MCINTOSH & MCGILLIVRAY.

The sheep business of New Mexico has also resulted in the establishment of another enterprise at home, viz, that of wool pulling and tanning. There are located at Las Vegas two wool-pulling plants, one of which is also engaged in the tanning of leather. The processes through which a sheep pelt goes from the time it is taken off the carcass until it is converted into leather are many and interesting. When the pelts are received by the puller they are soaked in tanks filled with

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clear, soft water. When the skin is thoroughly softened, the water is drained off, usually in hydro-extractors. If what is known as the sweating process is used, the pelts are then suspended from the tenterhooks in closed rooms called the sweat houses. Steam is introduced, and the chemical action produced by the heat upon the skin causes the wool to be easily removed from the skin after having been sweated for about forty-eight hours. The use of depilatories is largely supplanting the sweating method. In this case the flesh side of the pelt is painted with a solution of the depilatory. The pelt is folded and laid away for from five to twelve hours, according to the season of the year and the strength of solution, after which the wool can be pulled from the skin with great ease, the depilatory having destroyed or eaten the roots of the wool fibers. As the pullers remove the wool they sort it into different classes belonging to pulled wool, which are technically known as extras, fine super, A super, B super, and C super. The pelt from which the wool has been taken is now termed the "slat," and it is then put through the process of liming, beaming, bating, or drenching. At this stage, if the puller is also a tanner, the slat goes to the tanning department, whence it finally emerges as leather. There are about twenty different processes for tanning slats, the four principal ones being the chrome, the oil, the bark, and the alum. If the puller does not desire to tan the slats, he proceeds to pickle them, in which state they can be kept for a long period, or they may be sold to those who tan the slats only and do not engage in the preliminary work of pulling. The work of pickling is performed in order to preserve the slats in good condition for tanning when they are not tanned immediately after the bating process.

The location of these plants within the Territory supplies the growers with a splendid home market, just as the wool-scouring mills furnish him with an unsurpassed outlet for his wool clip. New Mexico pelts have an enviable reputation for their leather-making qualities. Eastern tanners prefer them to all others on account of their fineness of grain and toughness, and they are largely used in the production of imitation morocco and other leathers, as well as for glove stock, for which they are eminently suited. If the butchers and herders will exercise proper care in removing the pelt from the carcass and curing it afterwards, they can obtain fancy prices for them. Pullers and tanners have complained at times that excellent skins have been ruined for leather purposes by reason of careless skinning and handling in the primal stages, an objection that should and can be easily remedied by the exercise of intelligence and care on the part of those who skin the animals and prepare the pelts for shipment to the pullers.

The wool and sheep industry continues to be the most important in the Territory, and the flock masters are in a more prosperous condition than they have experienced for many years. The past winter and spring have not been surpassed in severity for the last fifteen years, and caused some losses among the flocks, besides reducing the lamb crop below the normal percentage, but the high prices which sheep and wool have commanded this season have obliterated the effects of the early losses, and the industry is one of the most profitable in the country. Its healthy and prosperous condition is evidenced by the number of people who are purchasing sheep and ranches in different sections of the Territory. The excellent demand for New Mexican sheep for "feeders" tends to prevent overproduction, and the number of sheep in New Mexico to-day is about the same as at this time last year, viz, fully 4,000,000. Wool brought good prices

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this season. In fact, the amount netted from the sale of their clips paid the growers a handsome dividend on the capital invested in their business, regardless of the value of the lamb crop. Wools sold for 12 to 15 cents per pound. This was equal to 60 cents to $1.25 per head, according to the weight of the fleeces, and as 30 to 60 cents per head will cover all the expenses incurred in the sheep business for one year, half of the wool clip was clear profit to the grower.

From the statistics of the wool production of New Mexico, by parties who are thoroughly acquainted with the wool markets of that Territory, the following table is compiled of the amounts handled by the several places in the Territory direct from first hands:

	Pounds.
Las Vegas	6,000,000
Albuquerque	2,500,000
Chama, Espanola, Terra Amarilla, Tres Piedras, and Antonita district	2,500,000
Clayton	1,500,000
Wagon Mound	1,000,000
Springer	1,000,000
Eddy and Roswell and Pecos Valley points	1,000,000
Belen	750,000
Santa Fe	250,000
Watrous	100,000
Balance of Territory	2,000,000
Total	18,100,000

It will be observed that Las Vegas heads the list with 6,000,000 pounds. In addition to this, between 3,000,000 and 4,000,000 pounds of the wool received from first hands at other places is handled by Las Vegas dealers, or through them, making the total amount of wool handled by Las Vegas merchants between 9,000,000 and 10,000,000 pounds, valued at over $1,250,000. Of the 2,500,000 placed to Albuquerque's credit, over half comes from first hands direct to Albuquerque, the balance coming in from points on the Atlantic and Pacific. In addition to this, Albuquerque dealers handle between 1,000,000 and 2,000,000 pounds from other points, so that the total amount that can be placed to the credit of Albuquerque dealers and commission men as handling would amount to perhaps 4,000,000 pounds.

A good deal of wool was handled at Chama this season, the amount being estimated at about 1,500,000 pounds. There is very little of it held back in Rio Arriba County. Prices were satisfactory. Upon the whole, people of the county of Rio Arriba have done very well during the past season, and are contented and happy.

GREAT MONEY EASILY MADE IN CATTLE AND SHEEP BUSINESS.

A number of lines of business in which large gains are now realized have been mentioned in different parts of this report. And what many are now doing many more could do, for one beauty about New Mexico is that an investment here is not simply one nail driving out another. Every department of industry and enterprise has abundant room for many additions, the newcomers doing as well as the old, and the old suffering no competition from the new. Were the stock investments of New Mexico doubled in value by the addition of new ranges and new animals, the old interests would not be damaged a particle, since the return on investment in this industry is determined by the condition throughout the nation. So with the production of wool and hides and pelts. For those having the means

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and somewhat of experience, the cattle or sheep business offers a field of almost limitless opportunity and vast profit, either in the purchase of present ranges or the development of others, should breeding be proposed; or in the purchase of lands and development of new ranches, should feeding and fattening be contemplated.

These enterprises require, of course, a considerable outlay of money in the purchases of stock and ranches, though the ranges are practically free, the location or development of water placing the surrounding unwatered lands at the use of the locator. But similar stock industries can not be entered upon elsewhere and to the same extent with less money, nor will the returns elsewhere be so satisfactory. Because of winter mildness, maintenance is less costly, and because of climatic excellence losses are fewer and increase is at a much larger ratio. The stockbreeders' Elysian fields lie in New Mexico.

GEOLOGICAL ASSOCIATIONS IN NEW MEXICO MINING CAMPS.

SIR: In accordance with your request, I transmit herewith a short account of the geological associations prevailing in a number of the mining camps in the Territory. While the data incorporated in this report are not all strictly of an economic nature, it is hoped that they may prove of practical service in the hands of intelligent mining men by aiding as much in the avoidance of unnecessary expenditure as in the direct exploiting of the mines. These data are derived from the work of the geological survey of the University of New Mexico, and form a part of the material to be published in extenso in the second volume of the report of that survey now in course of preparation.

Notes on economic geology of New Mexico.—It may be premised that the Territory of New Mexico is of so enormous extent that it follows as a natural consequence that its geological and economic relations differ in its different portions so entirely that the work done in any given area is no sufficient guide for work in other portions. It is necessary to carry the minute study of the formations into every section of the Territory before reliable generalizations can be formed.

The work has proceeded far enough, however, to enable us to deduce a number of general principles, which if they had been recognized a few years ago would have saved an enormous sum to the Territory, and would have done much to have conserved her good name as a mining country.

In spite of the diversity in details, the Territory is sufficiently homogeneous geologically to enable us to treat it as one geologic terraine. Most characteristic of the geological features of the section is its newness. For the most part the rocks which cover its surface and determine its topographical and economic character date from recent geological ages. The latest of the great geological cataclysms, the descent of the glacial ice sheet, has scarcely affected the Territory directly in any part. It is true that there are evidences of local glaciers in a few places and that the valley of the Rio Grande is, in its upper courses, to some extent filled with material that may have been transported by the floods from the melting ice of the continental glaciers farther north, but otherwise the Territory is innocent of the wonderful glacial phenomena of the Northern States. The effect of this escape from the educating effect of the "great, cold, continental sorrow" is discoverable in a crudeness of topography, an angularity of outline, and unretentiveness of soil that has a very important effect on the economic development of the Territory. As an acute observer said many years ago, Arizona and New Mexico are the best drained parts of the United States. The effect of the ice sheet was to pulverize impact and to fill with impervious basins lined with clay the vast thickness of soil it produced. In New Mexico the soils are either due to the disintegration of the rocks in place or to the collection of débris carried by streams.

This fact, in connection with the loose and friable texture of the recent rocks so largely making up the surface deposits, tends greatly to facilitate the escape of the waters from precipitation and from incoming streams. Nor is this simply a curious fact, for it is fraught with tremendous import. In various parts of the Territory, with similar climatic conditions, entirely different crops are demanded. Potatoes will grow in one canyon and not on the opposite side of the same range or in an adjacent canyon. This lack of homogeneity in the soils of the Territory is seen equally in the nature of the plants naturally growing in different places at the same altitude, and makes necessary a minute study of the soils from a logical point of view all over the Territory.

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The climate, in like manner, reflects the soil conditions. No one has sufficiently emphasized the effect of soil in determining the climate of New Mexico. It may be confidently stated that there is enough rainfall to insure the growth of crops in many if not most parts of the Territory without irrigation if only the soil were sufficiently retentive to hold and utilize the precipitation. To this may be added the well-nigh demonstrated probability that if the soil were more retentive, this in itself would tend to increase and distribute the rainfall. In this fact there is hope, for if sufficient pains are taken to preserve and extend our forest areas and to increase the cultivated lands, we may hope for a gradual modification of the climate and a tempering of the violence of the storms and greater distribution of precipitation. It has been possible to show that the local rains of this Territory are extremely sensitive to the radiant heat from the surface beneath, so that a bare extent of sand will actually ward off rains which fall about it.

The oldest rocks in the Territory known to the writer are granites and gneisses, which are generally only visible where the overlying rocks have been removed by erosion or faulting. Large areas of granitic rocks, however, are exposed in the northern part of the Territory, and in them are found quarries of mica, while they afford a good association for the metals when penetrated by basic rocks of later date.

These granites are exposed in the ranges bordering the Rio Grande south of Santa Fe, where they lie unconformably below a quartzite of varying thickness, and this, in turn, supports the great Carboniferous limestone series, which here attains a thickness of over 700 feet. The age of the granite has been a matter of controversy, but it is certain that it is metamorphic and represents some formation older than the Subcarboniferous. Beds of metamorphic limestone have been found in the midst of the granite.

The contact between the Carboniferous limestone and the quartzite (the place of which is sometimes taken by other modifications, such as a coarse conglomerate with pebbles from the underlying granite) is quite frequently impregnated with iron, and when this is the case the iron often forms a precipitant for copper. Such accumulations occur in the mountains of Postcarboniferous age along the Rio Grande Valley in the Oscuro, San Andres, Organ, Caballo, and other ranges. Veins in the limestone admit solutions of various substances which penetrate to the quartzite or granite, and at that point, in the presence of air and water, the iron reduces or precipitates the copper. Thus have been formed local deposits which are richest on the exposed surfaces and make a fine showing. The ore is of chalcocite, cuprite, melaconite, malachite, and azurite, and is often very rich. All these deposits are, however, fickle and superficial, and, while they may reward small capital, are rarely of sufficient extent to warrant great expenditure.

The source of much of the copper in the Territory is, however, to be found in a formation above the Carboniferous and only separated from it by the obscurely-defined Permean formation (which latter consists of limestones, shales, and sandstones assimilating with the Carboniferous below, and in some cases apparently passing by gradations into the Jura-Triassic). This formation (the Jura-Trias) is composed for the most part of red or maroon shales and sandstones, often attaining great thickness, but in central New Mexico usually limited to a few hundred feet. Although nearly devoid of fossils, this sandstone frequently contains large trunks of trees as well as leaves and branches which, in some cases, are fully silicified, while in others they are changed to coal, and in still others the carbon has been substituted for by copper. The latter process is easily intelligible chemically if water charged with copper in solution were present during the decomposition of the organic matter. These beds of vegetable matter accumulated in shallows of the ancient sea and form lens-shaped masses usually of no great extent. In some cases large trunks are fully transformed to copper ore, while in others only part of such a trunk is so transformed. In still other cases nodes or concretions of copper accumulate in shales of this series. There has usually been surprisingly little alteration in the copper in these shales, and the nodules then consist of pure copper glance or a mixture of the glance with iron. The Jura-Triassic sandstones are widely distributed and are easily recognized by the red color, and the occurrence of copper in the beds is almost as widespread as that of the formation. Such deposits occur at different places along the east side of the Rio Grande from the San Andres Mountains northward and are continued into the Mora region, also in the Jurassic deposits west of the Cochiti and thence westward. In some cases the strata are tilted and the alternate soft and hard layers leave long parallel ridges of the indurated sandstone that have been mistaken for igneous dikes and have led to an entirely wrong idea of the nature of the ore bodies.

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The following formation is the Cretaceous, which is represented by a vast series of yellowish and gray shales and sandstones. The latter often afford available building stone, while the shales are in a number of widely-separated basins interstratified with coal seams. Above the Cretaceous or unconformably deposited about its eroded and faulted edges are the marls, clays, and sandstones of the Tertiary age. In these beds there are few elements of economic importance aside from clay for brick. The Tertiary beds tend to be strongly modified by proximity to other older rocks, or rather they are composed of the débris from the destruction of their predecessors, and accordingly assimilate in composition and appearance to the parent rock. Thus, in a region underlaid by Jurassic rock, the Tertiary may assume the same red color, and in the vicinity of the great lava flows the materials of the Tertiary are largely or wholly derived from the products of eruption from these craters, as may be seen in the vicinity of the tufa flows of the Cochiti. Material for excellent brick has been found in the dark blue shales of the Cretaceous, as at Las Vegas, but for the most part the fictile clays must be sought in the products of river erosion. A curious exception is afforded by certain Carboniferous shales and fire clays east of Socorro and in the product of alteration of andesite and other basic rocks, where they have been covered by trachytes and other acid rocks. The reaction between these rocks in favorable circumstances produces a kaolinization of the feldspar and a removal of other ingredients, leaving fine white china clay as a result. Such beds are to be seen in Socorro Mountain and elsewhere.

The most important storehouses of the precious metals are found in the igneous or volcanic rocks of the Territory. From this list must be eliminated the last and most conspicuous class of such eruptives—the basalt flows of Post-Tertiary age. A very large part of the Territory is dotted with craters, from which the lava sheets have spread for many miles. This basalt is later than, and so covers, rocks of all ages, except the deposits of the rivers. Where the underlying soft rocks have been undermined by percolating water, as has often occurred, the sheet breaks down irregularly under its own weight and produces what is aptly called "mal pais," or bad land. No substance of economic importance has been found in these basalts, though they are rich in iron, and the heat evolved by the thin sheets has been insufficient to be instrumental in the segregation of ores from other rocks.

The remaining igneous rocks may be grouped into three general classes of intrusives—the andesite series, the trachyte series, and the rhyolite series. The first and oldest of these is the class of basic eruptives, mostly dark-bluish or brown rocks, with white crystals of feldspars mottling the homogeneous background, and, when these crystals are conspicuous enough, constituting what the miners call "bird's-eye porphyry." This rock is one of the most general sources of gold—that is, it almost constantly forms the country rock or is in some way associated with the gold ores. It is true that the andesite is not in itself a suitable rock in which to seek appreciable quantities of the precious metals, but when it has been greatly influenced by the quartziferous later intrusives, so that it is shot through and through by dikes of felsite or quartz, or where flows of these other rocks are interbedded with the andesite, the segregation of more or less of gold and silver may be said to be the rule. This is a fact that will be of the greatest possible help to the prospector as well as the mine reporter.

It is not always easy for the untrained eye to distinguish the andesite from other dark rocks with porphyritic inclusions, and there are light-colored and tufaceous phases of the andesite. Sometimes even the trained petrographer will be deceived or in doubt till he has the opportunity to use the microscope. The geological survey of the university offers its services in making such determinations, and it is well supplied with the necessary instruments.

If we were to name the mining camps where the country rock of the gold dikes is formed by the old andesite series of eruptives, nearly all the important mining camps would be included. The Mogollons, for example, afford illustrations of central andesite mountains covered and penetrated by later flows of trachyte and other acid eruptives. The same is true of the Black Range and of the Magdalenas. The Cochiti is a beautiful illustration of an isolated group of andesite peaks surrounded by a girdle of trachyte and obsidian eruptives. Here the form of the later eruptive is scoriaceous, and the beds of tufa cover vast areas and no doubt protect many rich lodes from the destroying hand of the miner. In southern Colorado we have traced the applicability of the same law. The Cerrillos group has but a small core of andesite in the midst of later material, but forms, with the series of mountains to the south, a special case.

The Otiz Mountains, for example, is chiefly composed of a remarkable rock of a granitoid appearance, which proves to be a rare species of ægerine syenite, but

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intermediate between an acid and basic rock. This extends in vast sheets over the Cerrillos coal fields, and in some cases interpenetrates the coal series, and has been the agent in the transformation of part of the lignite into a fine quality of anthracite. The radiating dikes of the same material form conspicuous landmarks in this region. The mines in the Ortiz are due to quartz intrusions in this material, which plays the same part that andesite does in other cases, and, moreover, it is intimately associated in many places with the true andesite. The southern part of the Cerrillos Mountains is made up largely of the same syenite, which has a decidedly greenish color in typical specimens, but there are also dikes and bosses of andesite immersed in the later flows. The syenite in this case has been intimately blended with fragments or great masses of the sedimentary rocks through which it has broken its way. These rocks were mainly Jura-Triassic and Cretaceous. It would appear from a careful study of the region that the turquoise owes its origin to action of the molten syenite on the copper-bearing sandstone of the Jurassic it had caught up in its escape. In the same way the deep deposits of lead and zinc may be explained as a result of the action of these flows upon the underlying Carboniferous. Other instances of this kind bear out the theory of such interaction.

The San Pedro Mountain is a more complicated instance of the interrelation of the andesite and syenite flows. The central part of the group is an old andesite volcano, but it has been thoroughly transformed by the intrusion of the syenite, so that the two rocks are apparently interbedded over the central parts. To the east the syenite is the prevailing rock, and large sheets and dikes of the same material occur. As in the case of the Cerrillos, the flows have caught up and uplifted the sedimentary sandstones and limestones. A curious garnet rock has thus been formed, and along the contacts of this are large deposits of copper and gold. The andesite and syenite association is also a good one for gold, and the region is a favored one in its geological construction, though somewhat circumscribed and disturbed. The effect of the eruption has made itself felt on the carboniferous limestones and, as in similar situations elsewhere, the contained lead and silver have been segregated by this agency, forming valuable mines.

South Mountain is also a syenite uplift, but the andesite element is lacking, and accordingly there seems to be no separation of gold. The adjacent limestones have, however, produced rich lead silver deposits of rather small and irregular nature.

In the Santa Rita district we have an illustration of the application of another principle. The region is essentially granite, the granite being like that elsewhere in the Territory—of a metamorphic nature. Upon the granite and its superjacent quartzite or conglomerate is a large sheet of limestone of subcarboniferous age. Along the Hannover Creek is a ridgelike uplift, from which the lime dips both ways, revealing the fact that at the contact of the lime with the underlying granitic rocks there is a collection of iron. In this case the iron is of great extent and good quality. In many places the iron has served as a precipitant for copper in the way above described, and large copper deposits occur. In the Santa Rita district proper is a large basin, affording an extraordinary opportunity for such precipitation. The basin is not of recent origin, as is seen by the occurrence of artesian water and the extensive alteration (kaolinization) of the feldspars in the porphyrys and granites of the basin. The iron may have come from the disintegration of the granite. The basin seems to have been formed by an uplift and fault to the south, cutting off the natural outlet. The iron appears on the margins of the basin and doubtless played its part in the collection of the magnificent copper deposits. The country rock is chiefly an orthoclase porphyry. The ores may originally have been in the form of the sulphides, but they now embrace the entire range from native copper in beautiful plates and concretions to malachite and azurite. Melachonite and cuprite are the characteristic ores in many of the openings.

The above instances are cited to illustrate principles which the observant miner may apply for himself. A few of these points may be summarized as follows:

Gold and silver are indigenous to the older eruptives, but require the influence of later silicious rocks to segregate them. They need not be sought in the later trachyte or rhyolite rocks unless there be present andesite or other basic rocks. It is useless to search for ore in the recent basalts. Copper is indigenous in the Juratriassic sedimentary sandstones, and may be found in organic deposits. It may also be found in the contact between the stratified rocks and the underlying granite, but peculiar circumstances alone warrant the hope of discovering large accumulations in either instance. Such a condition is afforded when the granite forms a basin and when iron deposits have preceded the copper. Lead is to be sought in the carboniferous limestones where the latter have been brought within

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the segregating influence of dikes of older eruptives. The lead will be found in shoots or channels worn in the limestone or in more permeable zones. The silver values are likely to be greater where the lead has been sublimed by heat. The original form of the lead is as galena, and the occurrence of carbonates indicates a concentration by water action. Turquoise is a result of metamorphism of copper-bearing stratified rocks by the action of intrusive igneous rocks.

These aphorisms might be largely extended, but may serve to indicate the tendency of recent research and the scope of the work now under way.

Very respectfully submitted.

C. L. HERRICK.

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

NEW MEXICO MINERALS.

GOLD, SILVER, COPPER, LEAD, AND IRON.

RICH FIELD FOR PROSPECTOR AND INVESTOR IN EVERY COUNTY IN THE TERRITORY—THE CLIMATE PERMITS OPERATIONS THE YEAR ROUND.

That the whole mountain region of New Mexico presents a sure prospecting field is a safe assertion. To say that a few favored spots at which developments have taken place—merely points on the vast area of known mineralized territory—show even a small part of the great resources of our mountains is false. In the heart of the best developed camps is still much virgin ground, and much of the mineral-bearing area has scarcely been scratched by the prospector's pick. The chances in this Territory to-day are equal to those presented by the Cripple Creek or Leadville districts.

New Mexico has upwards of 80 mining districts, which are widely distributed, proving that the mineral wealth is not confined to one section.

In the northwest San Juan County presents great possibilities for extensive hydraulic operations.

Next, to the east, is Rio Arriba, where many thousand acres carry placer gold in sufficient quantities to permit of large enterprises. Perhaps no stream in the west presents the same advantages for the successful employment of first-class placer dredging machinery as the Chama. This gravel runs by test from 35 cents to $3, and, in some cases, as high as $7 per cubic yard. The famous mica beds are also in Rio Arriba County.

Taos County is not only a rich field for the placer miner, but for quartz mining it has districts already developed which indicate its boundless wealth. The Red River country is already well known to the mining world and is rapidly making a reputation as a producer of gold. La Belle and Amizette are also vigorously pushing to the front, development showing great possibilities.

Colfax County has already produced many millions in gold. Comprised within the boundaries of the Maxwell grant in this county are a large proportion of mineral lands, and the liberal terms given to prospectors by the grant owners is worthy of notice. Among the districts on this grant are Old Baldy, a large producer of gold; Ute Creek, where is located the famous Aztec mine, with a record of almost $1,000,000, and the Montezuma, a producer of about $300,000. There is great activity in Moreno Valley and in the Elizabethtown placers, which have to their credit over $200,000 in gold. Hematite is another promising camp in the immediate vicinity.

One of the richest mineral regions of the world is to be found in southern Santa Fe County. The placers at Dolores, Golden, and San Pedro, which were worked more than two hundred years ago by the

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Spaniards, and are still being worked with "dry washers" by their descendants, have an inexhaustible supply of paying gravel, and the mountain range is one vast upheavel of mineralized rock. Cunningham Hill, in this district, is famous as being a mountain of ore. Dolores, San Pedro, and Golden were all mining camps before the discovery of Pike's Peak. At Dolores the Ortiz mine was a producer for years, the first milling machinery for the mine having been freighted across the plains before the advent of the railroad. It has a record of several millions, and preparations are under way to make the mine an extensive producer again. Near the Ortiz mine is the Benton, also a heavy producer of gold in former times, but idle for several years owing to litigation. The Benton is now in the hands of Judge Foree, of Durango. Near San Pedro the most noted properties are the Lincoln Lucky, the Gold Standard, and the Santa Fe Copper Company's mines. The Gold Standard has recently been bonded to capitalists for ninety days at a comfortable figure. At Golden is also located the Monte Cristo Mining Company, which is successfully working the immense gravel deposits on a large scale. Near Cerrillos is situated the turquoise mine. The output of turquoise since 1890, according to official report, has been about $2,000,000, although the former owner of the property claims this to be an underestimate, and says the yearly output since 1893 will reach $1,500,000.

Bernalillo County has 5,000 square miles of mineralized lands. The Cochiti district, in the Jemez Mountains, is becoming almost as well known as the farfamed Cripple Creek, and is willing to dispute with the latter the title of the "greatest camp on earth." The Albemarle has one of the finest milling plants in the West, and the returns from the company's mines are a substantial proof of what energy and capital will accomplish in New Mexico. Others of the best-known properties in the district are the Washington, Lone Star, Crown Point, Iron King, and many more. Hell Canyon, 20 miles to the east of Albuquerque, has some large bodies of free milling ore and fine indications of copper. Considerable work is now being done in the district and the near future will see it attracting the attention it deserves.

The Magdalena Mountains, in Socorro County, have been for years the scene of great mining activity. Lead-silver ores abound in the district, and late developments at Water Canyon and Copper Creek show good bodies of gold ore. The Graphic mines, under the management of Capt. A. B. Fitch, are well-known producers, and are at present being worked to full capacity day and night. The Kelly mines are also located in these mountains. In western Socorro County, near the Arizona line, is the Cooney district, rich in high-grade silver ores, but now being worked for their values in gold.

The far-famed Black Range of mountains, extending through Sierra County in a northerly and southerly direction, form the Continental Divide and constitute one of the greatest mineral sections of the world. From San Agustin plains on the north to Cook's Peak on the south, about 120 miles, and with a breadth of 40 miles, is a vast mineralized area which has been producing gold, silver, copper, and other precious and useful metals for years. The established districts on the north most largely developed are the Black Range and Apache, whose possibilities are as yet practically untouched and are beyond estimate. Following the range south are the Animas, Lake Valley, Percha, and Kingston districts, the principal mining centers on the belt above spoken of in Sierra County. At all these points are highly productive gold and silver mines. The ore from the Silver Cell, one of the

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deservedly famous mines in this range, was so rich that it was refused by the smelters and had to be sent directly to the mint as bullion, and the "Bridal Chamber," in the same range, took out in one piece silver valued at $80,000. One chamber, with the dimensions of an average dining room, surrendered to its lucky owners more than $1,000,000. Is it not time for capital to more thoroughly investigate a country with such stores of wealth? The immense gravel beds, rich in gold, at Hillsboro, should also be mentioned.

Grant County has within its boundaries some of the best-known gold-producing camps of the Southwest. Santa Rita del Cobre, the oldest district, has been worked since 1808, and its mines are rich in copper. Pinos Altos has a number of large producers, and the results accomplished in the past two years are proof of what capital and judgment are capable. San Francisco and New York mining men are large holders of Pinos Altos properties, and their presence in the district is felt. Hanover is rich in copper, and developments at present make special reference to the camp or individual mines unnecessary. Its ores are rich in copper, with an excess of iron. Cook's Peak is a heavy producer of lead-silver ores, and the shipping records of its many producing mines are its recommendation. Other camps in Grant County which are attracting their share of attention are Central, Gold Hill, White Signal, and Black Hawk, all rich in gold, silver, copper, etc.

Donna Ana County is dotted and crossed with mountain ranges which are pregnant with mineral wealth. Mines in the Caballo Mountains carry lead-silver ores; those of the Organs are rich in native silver, and in the San Diegos is found free-milling gold ore. There have been several recent strikes in Donna Ana County which are very rich.

The Old Abe mine, near White Oaks, in Lincoln County, is one of the heaviest gold producers of the Southwest. Workings in this district have reached a depth in some mines of 800 and 1,000 feet, and at that depth ore bodies are more permanent than nearer the surface, showing that nothing is lost by deep working. The Bonito country has extensive low-grade free-milling gold ores, but has been little prospected. In fact, this entire section is almost a virgin field for the prospector. The Jicarilla placer fields are well known to the miner looking for a grub stake. The completion of the El Paso and Northeastern into this rich section will go far toward assuring its future.

In the new county of Otero can be found minerals which will bring it prominently to the attention of the mining world. Besides the new placer discoveries in the Jarillas, which cover about 40 miles of gulches, a new find of ore, believed by the lucky discoverers to be tin, is the latest, and as there are large bodies of it, if their surmise proves to be correct, it will become one of the centers of mining excitement in the Territory.

The chain of mineral deposits running through Colorado are practically the same as found throughout the entire extent of New Mexico, superficial conditions and geological formations in this Territory being almost identical with those found in Cripple Creek and other rich Colorado camps. Following the mountain range from the northern boundary through Colfax and Taos counties to the southeast through Santa Fe to Lincoln, and to the southwest through Bernalillo, Socorro, Sierra, and Grant counties, the same general indications are met, the outcroppings being conspicuous and almost continuous. Many mines in this range have been good producers for years and new and valu-

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able finds are of almost daily occurrence. At the present time development is being carried on more vigorously than in the history of the Territory. When the prospector and investor considers that this mineralized region extends through New Mexico a distance of over 400 miles and strikes almost every county in the Territory, he can readily see that it is the most attractive field in the West. Climatic conditions which make it possible to work the year round are also an advantage not to be overlooked.

Pine, fir, and spruce cover the mountain ranges below timber line, thus furnishing a plentiful supply of timber for mining purposes.

In the matter of fuel the coal fields of New Mexico are extensive, and as they are widely distributed, their product is easily and cheaply furnished to every district in the Territory. Labor is another feature which must not be overlooked, as it is especially cheap.

Among the natural resources of the Territory are gold, silver, lead, zinc, copper, brown and red hematite, ricolite, mica, coal, limestone, sandstone, fire clay, hydraulic cement, infusorial earth, silicified wood, turquoise, garnet, opal, natural gas, petroleum, mineral waters, mineral paint, alum rock, basalt, and the latest discovery—tin.

MINING AND MINERAL RESOURCES.

The mining resources of New Mexico are something wonderful. Here we have practically everything in the shape of mineral too numerous to mention, but running from salt and sulphur up to gold and silver and precious stones. And while there are numerous paying mines, none of them are what may be said to be well developed so far. All that it needs is the influx of more capital to thoroughly develop its various mines, when this Territory will become one of the richest mineral-producing regions of the Rocky Mountain range.

The mineral resources of our Territory have been slowly but surely forcing the attention of capitalists, and the outlook for the coming year is very encouraging and brighter than it has ever been. It has been a hard matter to interest men of means in our mines, but gradually this indifference is wearing off and capitalists are now sending experts to examine into the many promising propositions throughout the Territory, and we hope for good results from the interest taken by our Eastern friends, as New Mexico offers as fine opportunities in the mining line as any portion of the globe. This interesting of capitalists means that money for development, for mining machinery, for smelters, mills, and other reduction plants will find its way to New Mexico and make the mining camps of New Mexico large producers.

GOLD OUTPUT WILL BE ENORMOUS FROM MANY DISTRICTS—EASTERN CAPITAL IS BEGINNING TO DISCOVER THE OPPORTUNITY—NOT ONLY GOLD, BUT OTHER METALS AND PRECIOUS STONES ARE FOUND THERE.

Mining matters in New Mexico can only be spoken of as surprising in every respect, and everywhere from along the line of that industry reports are continually coming in of new strikes being made, old mines being worked to their fullest capacity, and new corporations being formed for the purpose of exploration and practical working. It is being demonstrated every day, and in all of the principal districts, that there is gold and plenty of it. What is needed now is capital with which to work mines that have been proved more than good paying propositions. In many districts the experimental period is positively passed, and practical work with capital is being done. Capital is pouring in from the East, and the gold mines of New Mexico are proving vastly more productive of profits than the manufactories of Massachusetts, Ohio, and Illinois, and Eastern men are beginning to realize that such is a fact.

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THE MOGOLLON DISTRICT.

Down in the southern or Mogollon district the activity is very great, and increased capacity is steadily marked. The Confidence is turning out from 80 to 100 tons of ore every day with a force of 70 miners. The ore is of good quality, and the proprietors are enjoying a well-deserved period of profits.

The Deadwood mine, in the same district, is now run in connection with the Deep Down mill, which is using daily considerable ore which averages $16 in gold and $21 in silver. There are immense bodies of this ore in sight and very easily gotten out. Numbers of smaller mines in the same district are being worked, and prospectors are actively looking up that region, and with considerable success. The Philadelphia men who are interested in that section are reported as pushing the formation of their big company, and it is expected their operations will be commenced in the near future, giving numbers of men in that region employment.

THE HILLSBORO OUTPUT.

And at Hillsboro, in practically the same district, the output from the mines last week amounted to 180 tons. This is a section which could be advantageously prospected. Other regions in the Territory have become so well known to mining men that their attention has been diverted to a great extent away from the promising Hillsboro country, although it has been demonstrated there is plenty of gold and other mineral in that region only awaiting development.

In the Ortiz mine grant things are looking lively. The men who have control of the Edison interest there do not say much, but it is generally known that the machinery for the intended gigantic operations on that grant by the Edison Company is being gotten ready in the East as fast as possible, and that before very long a large number of men will be finding employment in producing the yellow stuff from that immense deposit of ore.

THE ORTIZ MINE.

The Ortiz mine is now being run to its full capacity, about 50 tons per day being the average. This mine bids fair to become a wealth producer, and it is significant that but a few months ago the boiler horse-power at that mine was but seven. Within a few months two changes, both for more power, have been instituted, and to-day they are using a 100-horsepower boiler, to its full capacity, with the probability in the near future of being compelled to add more as their property reaches a higher state of development.

The Shoshone, in the same country, is another proposition which is very well thought of, and the owners are now engaged in sinking another shaft. At a depth of 20 feet, 4 feet of mineral has been disclosed, and predictions for the future of that property are very bright.

THE COCHITI DISTRICT.

In the Cochiti district and around Bland and Golden things are particularly promising. Bland seems to be a trifle more favored so far as new people and prospectors are concerned, it being reported that new arrivals to that camp have averaged 10 per day for some time back. As few of the new prospectors seem to have any thought of leaving, it must be taken as conclusive evidence that the camp is in a sound, healthy condition. Most of the new arrivals are those directly concerned in mining, and as there is a large unexplored and unclaimed body of land in that vicinity yet, the prospects seem to be alluring for the prospector. Newly-opened claims are very easily disposed of, but the owners seem to be inclined to hold on, knowing that time will increase the value of their properties. The Cochiti is undoubtedly the best paying region in the Territory.

NOT A BOOM MOVEMENT.

The unusual developments, both under way and projected, are not the result of a boom; they are but the honest, gigantic stride forward of a surpassingly rich country, whose resources are beginning to be known. The latest big project is the substitution of electricity for steam as the motive power in that district. With a big dam constructed across the Rio Grande about 12 miles above the Albemarle group of mines, and an electric-power house at that point large and powerful enough to furnish power to not only the mills, but for the tramways and lighting purposes, it is plain to be seen that the Cochitis will be prosperous. This scheme is a bona fide proposition and will be carried out by the manager of the Albemarle, backed by his company. One mining deal was consummated this week whereby a Mr. Weatherhead, of Cleveland, Ohio,

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gained control of the Gleason mine at Golden. He proposes to immediately install new reduction and smelting works on his claim and the property will no doubt pay out big. It has a 2½-foot vein ranging from $20 to $200 to the ton.

In the Crown Point active work is being done, drifts being run, and the contractors report the ore improving at every foot of advance. The Monte Cristo has been enjoying a run of luck, and the owners have ordered 100 tons of machinery for their placer claims. On the Ermine extension development has been recently done, the results proving highly satisfactory, the property showing a 4-foot vein running through. On the Albermarle Group everything is humming. The pay roll of this mine already averages $16,000 per month, and that property bids fair to make a national reputation as a producer of gold. While gold commands the most attention, the silver propositions are all right, and should silver ever be restored to its rightful place, prodigious production of that metal in central New Mexico would be chronicled. Opals are frequently found in this part also. In Santa Fe and more particularly Taos County, deposits of copper are being exploited with good results, and the Copper Glance mine in Taos County has been bonded to Chicago capitalists.

THE RED RIVER COUNTRY.

Up in the Elizabethtown and Red River country everything betokens a very busy summer, and, like the other mining districts of the Territory, seems to be very sanguine of pronounced and abundant success.

Every able-bodied man in that region is able to instantly command work. At the Mallette property very fine free gold specimens have been shown up, with the full expectation that the good prospects will continue. The "I Own" is undergoing considerable development. H. B. Tompkins's property on the Black Mountain, in the same vicinity, is panning out well, his shaft at 35 feet showing up a 4-foot vein of excellent ore. One of the promising claims is that of Henry Young, who has been actively at work taking out ore that assayed $500 per ton. The Anderson property at Elizabethtown is authoritatively reported as sending $100 ore to the mills. In the northern region, and, in fact, in the several mining districts of the Territory, the mining outlook for the coming season is particularly enticing, and there is no doubt but the present success will prove a great benefit as a sound advertising medium for the undoubtedly great and rich mining resources within our borders.

THE MINES OF NEW MEXICO.

[From Territorial Bureau of Immigration.]

GOLD, SILVER, COPPER, LEAD, IRON, COAL, AND ALL THE PRECIOUS AND USEFUL METALS AND MINERALS—FIELDS FOR THE PROSPECTOR AND INVESTOR IN EVERY COUNTY OF THE TERRITORY—A CLIMATE THAT AFFORDS AN OPPORTUNITY FOR THE MINER TO WORK THE YEAR 'ROUND—THE ATTENTION OF MINING MEN FROM THE NORTHERN STATES NOW BEING ATTRACTED TO THIS TERRITORY, RICH IN MINERAL, AND LARGE-SIZED INVESTMENTS ARE BEING MADE.

A vast mineral field.—Mr. J. D. Bone, a mining expert of good standing, who has a practical knowledge of the different mineral districts in the Territory, says:

"As a broad assertion, we may say the whole mountain region in New Mexico is a fair and a reasonably sure prospecting field. It is a very false idea to suppose that a few favored spots, at which development has taken place—merely little pin points on the vast area of known mineralized territory—are all, or one-thousandth part, of the great resources of our mountains.

"We do not hesitate to say that quite a promising field for prospecting would be right in the midst of any one of our oldest camps. This being true in the oldest and livest mining camps of the Territory, surely the vast field of known mineral-bearing area has been but indifferently prospected, if indeed, at all.

"The seeker after hidden wealth has here in New Mexico a wide field, one which it is not at all improbable will exceed in value anything yet discovered. The areas most likely to produce results are where eruptive forces have been most active and the disturbances and crystallizing of the strata most pronounced.

"In this Territory, with its 122,444 square miles, are rich and inviting fields, practically untouched by the pick of the prospector, and offering the miner and capitalist opportunities for rich returns for labor and money expended, such as are very seldom found in any mining section of the great west. As good, if not better, chances are presented within the boundaries of this Territory than were found in Leadville or Cripple Creek, Colo.

"*Mining districts.*—This Territory has now some eighty-five mining districts, which are scattered widely, and cover a large section of country, thus showing

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that the mineral wealth is by no means confined in any one special place, but largely distributed over a great extent of territory.

"The territory in New Mexico already more or less developed equals 30,000 square miles of mineral-bearing country, and the better developed districts of this vast extent are as rich as any exploited elsewhere in the United States, and its as yet great 'undeveloped areas' offer to the intelligent prospector and energetic man of means opportunities found in no other mining country.

"*The great mineral belt.*—By examining any ordinary map of the Western States it will be seen that all of the most valuable recent developments of minerals in southern Colorado are on a well-defined line following the Rocky Mountain system into and across New Mexico, and that that line extends through the central west and southwest portions of the Territory without a break of any considerable extent.

"That conditions along this extent of country, almost 400 miles in length, in many respects resemble the gold and silver bearing formations of Creede, Cripple Creek, Rosita, Silver Cliff, and the great San Juan country of Colorado can not be doubted, and in the coming years it is not unlikely this section of New Mexico may develop many places as productive of wealth as the above-named Colorado districts.

"*New Mexico gold fields.*—Lying just south of the great Commonwealth of Colorado, our first counties are San Juan, Rio Arriba, Taos, Colfax, and Union.

"The evidences of gold throughout San Juan are such that this county becomes attractive as a point where extensive hydraulic operations may be conducted with every assurance of success.

"Passing east from this county we come to Rio Arriba, where the mineral deposits, worked to any great extent, generally take the form of placers and vast fields of coal. It would seem to us that in the vicinity of Tierra Amarilla and Good Hope would be a good and most promising prospecting field for the precious metals.

"*Rich placers.*—Near Abiquiu, along the Chama River, are gold placers that cover nearly 20,000 acres, which show a remarkable average yield of gold, and as water seems to be plentiful for most of the year, this vicinity is unexcelled as a point where large and paying mining enterprises may be conducted. Examination of these deposits along the Chama River are now being made by Prof. F. A. Reynolds, acting under directions from an Eastern mining syndicate, and the daily press report this gentleman as saying that gravel tested by him runs from 50 cents to $3 in gold per cubic yard.

"The deep placer deposits of Taos County, along the Rio Grande, are probably the most extensive in the United States, and investigation warrants us in saying that nothing since the discovery of California and Australia is comparable for its measurable resources of gold available by the hydraulic process. Reference to the report of Prof. Benjamin Silliman, of Yale College, to the Commissioner of the General Land Office, published in 1880, will fully convince even those who are sending men and money to explore Alaska's frozen fields that right here in New Mexico—a land of perpetual sunshine—are equally rich and much more desirable gold-placer deposits. The altitude of these deep placer deposits is perhaps 7,000 feet; still, because of this locality being sheltered by the encircling mountains, and because of its more southern latitude, placer mining can be carried on quite nine months of each year and at points the entire year. These great placer deposits do not alone constitute Taos County's great undeveloped resources, for her mountains are rich in metals, as is fully shown at numerous points where there are producing gold, silver, and copper mines.

"*Quartz mining.*—The Red River country in Taos County is fast becoming known to mining men throughout the world as a district destined in a very short time to rival any one of our greatest gold-producing sections.

"At La Belle, Amizette, and other points development is being rapidly pushed, and it may be said that Taos County has fairly entered upon a bright mining future.

"To the east of this rich county of Taos lies Colfax County, a district which has produced many millions in gold, and which to-day gives brighter promise than at any time in its history. A very large proportion of the rich mineral lands of this county are comprised within the boundaries of the Maxwell Land Grant Company's property. The liberal policy pursued by this company in its dealings with the prospector is worthy of notice. The management of this grant has laid down rules very similar to those governing mineral locations on public domains, and the property is thrown open to the prospector and miner, who can at a nominal cost acquire title and develop mining properties on the grant. The old Baldy district on this grant is a large gold producer, so also is the Ute Creek district, where is located the famous old Aztec mine, with a record of almost a million in gold. The

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Montezuma mine, on what is commonly known as Montezuma Hill, has produced between $200,000 and $300,000.

"There is greater activity in the west Moreno Valley district than ever before, and only 3 miles from the new but promising camp of Hematite are the world-famed Elizabethtown placers, which have produced over $200,000 in gold. Aside from these famous placers it is said that miners, in a crude way, produce large sums in gold from placer ground but little known.

"*Grand opening for prospectors.*—Little mining of the precious metals has been done in Union County, but it is not an unlikely field for prospecting for our undeveloped mineral resources.

"Passing from Union County, we next take up Mora and San Miguel counties, two sections of the Territory which seem to have been but indifferently prospected. The mountain range west of the city of Las Vegas lies directly in the gold-producing belt, and surface indications are most favorable.

"South from the city of Santa Fe, Santa Fe County, and not far from the town of Cerrillos, in a disconnected range of mountains, with perhaps an average width of 7 miles, is one of the most remarkable mineral regions of New Mexico, and we may say of the world. This range travels north and south and is known as the Ortiz Mountains. The surface indications are unsurpassed, and a number of fine bodies of low-grade, free-milling gold ores are found, among which may be especially mentioned the famous Cunningham Hill and adjoining properties near Dolores. The main western lode, especially in its southern extension, is rich in copper, as found in the workings of the San Pedro Copper Company. This region was known to the early Spanish explorers, who, upon their advent into this country, discovered and worked the rich gravel deposits at the base of Ortiz Mountain, in and about San Pedro, Golden, and Dolores.

"*A million a year.*—An experienced and reliable expert who examined these extensive placers a few years ago reported that, 'if sufficient water were placed thereon, these placers could be made to yield $1,000,000 in gold per year for over twenty-three years.' The 'country rock,' being soft and porous so that the vein matter lying near the surface rapidly oxidizes and the oxidized 'honeycomb' quartz remaining with its vast supply of free gold, is eroded by degrees and being carried down the slope to feed the placers below.

"*The famous turquois mine.*—In the vicinity of Cerrillos is a small section of mountainous country, in which is located one of the world's best known and most productive turquois mines. There are, as near as we can learn, some sixty or seventy turquois claims in New Mexico, some ten or a dozen in active and profitable operation.

"The output of turquois in New Mexico, as taken from official sources, was $150,000 in 1891, $175,000 in 1892, $200,000 in 1893, $250,000 in 1894, $350,000 in 1895, and $475,000 in 1896; but it is openly asserted that the true value of turquois mined since 1890 has been greatly underestimated. As an illustration, one of these mines sold in 1893 for $250,000, and, according to the statements of a former owner, has paid a million and a half a year since that time. One single stone taken out is reported to have been bought for $6,000 in New York.

"*Cochiti and Hell Canyon.*—Leaving Santa Fe County, we next take up Bernalillo, which has an area of 8,000 square miles, of which 5,000 square miles are classed as mineral lands. The well-known Cochiti mining district practically dates from discoveries made in 1893. Progress was retarded by title suits under old grants, but a decision favorable to the miners was recently handed down by the United States Supreme Court, and now development in this wonderful camp goes steadily forward.

"East of the city of Albuquerque some 20 miles is the Hell Canyon district, destined in the near future to attract widespread attention. The large bodies of free-milling ores disclosed in the workings of the mines are probably as extensive for amount and character and work as any in the United States. These large bodies of ores are deserving of investigation, and if operated on proper lines will produce handsome returns for many years to come. Considerable mining machinery is now being placed in the camps and active operations will soon commence.

"In our travels south we have now come to Socorro, a county blessed with abundant natural resources, extending as it does about 170 miles east and west by 100 miles north and south, and containing over 10,000,000 acres, some sections of which have produced millions in mineral wealth. This county, which for many years past has been steadily adding to the mineral wealth of the world, stands to-day upon the threshold of a brighter future than at any time in its history.

"*A carload of bullion a day.*—Just west of Socorro City there are large deposits of lead-silver ores, but only at one point in the county is this class of ores now

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being mined to any great extent—in the Magdalena Mountains. Water Canyon and Copper Creek districts, west of Socorro City, are very rapidly coming into prominence as gold producers, and with the improvements now being made bid fair to rival the best-known sections of the Territory. At the town of Kelley, some 30 miles west of the city of Socorro, are located the famous Kelley mines, heavy producers of lead-silver ores. Under the able management of Capt. A. B. Fitch the Graphic mines are producing with ease sufficient ore to keep in full operation day and night the 100-ton smelter. A carload of bullion is turned out by this plant every twenty-four hours, thus making lively times not only for the many miners in and about Kelley, but every man in this section reaps a measure of benefit from this industry.

"Away to the west in Socorro County, near where the Territorial boundary line joins Arizona, is located the Cooney district, a section at one time producing high-grade silver ores, but whose mines are now being worked largely for the gold values contained in the ores.

"*The far-famed Black range.*—We have now reached the county of Sierra, wherein are located the well-known Mimbres, or Black range of mountains, which in many respects are among the most remarkable in the United States. It has been most truly said that an extent of country from San Augustine plains on the north to Cooks Peak on the south, a distance of over 120 miles, is mineralized in a greater or less degree throughout. Mines located along this mineralized belt of country have long been famed as steady producers of high-class ores of all the useful metals, including gold, silver, copper, lead, and iron. The Black range extends in a northerly and southerly direction, and is about 40 miles in width. The apex or summit of the range forms what is known as the Continental Divide. The topography of the country is such as to make any point easily accessible."

A yet undeveloped field.—A large percentage of the known mineral-bearing area of New Mexico has been but indifferently prospected—very much of it not at all. Consequently there is still here a wide field for the seeker after hidden wealth. It is therefore not impossible, or even improbable, that there are yet here quite as profitable fields, untouched by the pick of the prospector, as any that have been developed. There is good reason to believe that the southerly western portions, nearly all mountainous, bordering Arizona and Old Mexico, abound in all the valuable minerals equally if not beyond the northeasterly portions of the mountain areas, nor that in due time, under the rigorous search of the energetic and intelligent prospector, great values will in the not distant future be developed, and to an extent and value equal, if not beyond, any that have yet been reached.

The capitalist, the miner, or prospector who decides to cast his lot here will find the foundations of a broad and enlightened society well established. They will find a generous, progressive, and liberal-minded people, ready to lend a helping hand to every comer. They will find order, society, law, and an enlightened public sentiment ruling the Territory.

Favorable climatic conditions.—Not only the character of these deposits as given by conservative and reliable correspondents, but the accessibility and value as shown by the daily record of output and the vast extent of the field covered, mark this as the most attractive field covered to the minor and mine hunter yet developed on the American continent, if not in the world.

The annual report of the New Mexico section of the United States Weather Bureau for 1897, published in Bulletin No. 1, 1898, contains valuable information in regard to the climatic conditions in New Mexico, especially to prospectors and miners. While it shows, as compared to more northerly latitudes, that the mean temperature of the mining sections of New Mexico was seldom below the freezing point and the weather was very rarely too cold for prospecting or surface-mining work. If so disposed, the miner can put in the entire year prospecting or mining, at his pleasure or convenience.

Mining claims, how located.—The bureau frequently receives inquiries asking for information concerning the manner of locating mineral claims in New Mexico, and if our laws differ from the regulations prescribed by the United States General Land Office.

We can say that, in the main, the United States laws, as found in the Revised Statutes, governing the location of claims, govern also in New Mexico; the laws of New Mexico making one additional requirement relating to the locating of mines, which is set out in section 1 of chapter 25, Laws of 1889, as follows:

"That the locator or locators of any mining claim, located after this act shall take effect, shall, within ninety days from the date of taking possession of the same, sink a discovery shaft upon such claim to a depth of at least 10 feet from the lowest part of the rim of such shaft at the surface exposing mineral in place, or shall drive a tunnel, adit, or open cut upon such claim to at least 10 feet below the surface exposing mineral in place."

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The United States laws prescribe that mining claims upon veins or loads of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits, shall not exceed 1,500 feet in length along the vein or lode; and the claim is limited to 300 feet on each side of the vein or load. (See sec. 2320, Rev. Stats.)

Tunnels.—Where a tunnel is run for the development of a vein or lode, or for the discovery of mines, the owners of such tunnel shall have the right of possession of all veins or lodes within 3,000 feet from the face of such tunnel on the line thereof to the same extent as discovered from the surface; and locations on the line of such tunnel, of veins or lodes not appearing on the surface, made by other parties after the commencement of the tunnel, and while the same is being prosecuted with reasonable diligence, shall be invalid. Failure to prosecute the work on the tunnel for six months shall be considered an abandonment. (See sec. 2323, Rev. Stats.)

Remarkable activity.—The eyes of mining men being now upon the remarkable activity which has suddenly opened up in the Cochiti district, we quote what Mr. Frank W. Wynkoop says of one of our live camps:

"A movement of great importance to the mining world, and especially to New Mexico, is at present in progress in the Cochiti mining district, which is situated in Bernalillo County, some 50 miles north of Albuquerque, the county seat, and some 40 miles west of Santa Fe, the capital of New Mexico. Mining is reviving throughout the district. Mining companies of long and general experience, supported by unlimited capital, have taken hold of many of the larger properties, and have instituted operations of a nature not to be surpassed by those of any mining district in the West. The leading features of these operations consist of the construction of a steel mill of 125 tons daily capacity, at a cost of $250,000, to treat the ores of the Albemarle group of four mines; the resumption of operations at the Bland mill, under improved methods and with excellent success in the saving of the gold and silver values contained in the ores of the Lone Star group of mines, at a cost sufficiently low to afford a handsome profit; the projected new 200-ton mill to treat Crown Point and Pino Canyon custom ores, and the development of many of the mining properties which, up to a few months ago, lay idle for the need of capital to make them paying mines.

"To give an idea of the magnitude operations in this district are attaining, we will mention the fact that within the past three months extensive developments have been in progress upon four large properties; five other large groups of claims have been taken under lease and bond by responsible mining companies of long experience for large amounts; the construction of one quartz mill has been completed and the construction of another mill is in progress, while two others are in contemplation of early erection.

"The entire Cochiti mining district embraces a mineral region some 6 miles from east to west by about 18 miles from north to south, and includes three distinct parallel quartz lodes extending north and south and cropping above the surface, which are of enormous size and possess an even value of $8 to $40 to the ton, selected ore running as high as $1,800 to the ton.

"The indications of the present leave little doubt that the Cochiti mining district will henceforth enjoy an era of great prosperity."

A Klondike at home.—The "Klondike of the Southwest" is the name frequently applied to New Mexico, and, judging from the flattering progress she has made in mining since January 1, 1898, before the end of the year the fever for the gold in the "Klondike of the Southwest" will be as high and unabating as it now is for the "Klondike of the Northwest," and, in contrast and comparison, producing gold against gold, railroad facilities against reindeers and dogs, food against famine, comfort and health against hardships, and happiness against misery.

Our vast natural resources.—It is no exaggeration to affirm that in point of natural resources none of the Rocky Mountain States exceed New Mexico. In addition to gold, silver, copper, lead, and zinc, coal (anthracite and bituminous), fire clay, alum, sulphur, salt, gypsum, onyx, and marble are found in large deposits. New Mexico supplies the world with turquois.

GYPSUM.

In south Santa Fe County, in the county of San Miguel, and in several other places in New Mexico are to be found large deposits of this mineral. In Donna Ana County, on the San Augustin Plains, there exists the largest deposit of gypsum known in the world, of an exceedingly pure character. The location of this deposit is unique. The

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San Augustin Plain is about 150 miles in length from north to south, and from 30 to 60 miles from east to west. Near Whiteoaks, in Lincoln County, in the midst of this plain, is the crater of an ancient volcano, the lava from which has flown in a southerly direction like a stream of water for a distance of 60 or 70 miles, varying in width from one-half to 3 miles. At the southern end of this stream of lava there is a small stream of salt water flowing into a salt lake, about 1 mile in width, and 1½ miles in length. At the southern end of this lake the bed of gypsum begins, and extends in a southerly direction down the center of the plain, adjoining what appears to be an ancient river bed, almost without a break for a distance of 50 miles. The gypsum bed varies from 5 to 20 miles in width. It is granulated in character, white as the driven snow, and seems to be piled up on the plain like snow-drifts, requiring no labor for mining or for handling. I can not more accurately describe its appearance than by comparing it to granulated sugar. If you should take granulated sugar in one hand and the gypsum in the other, it would be difficult to tell one from the other by sight or touch. The body of the gypsum stands from 10 to 40 feet above the surrounding plain, and the line is as distinctly marked as the sand upon the ocean beach.

CARBONATE AND SULPHATE OF SODA.

Immediately adjoining this extensive deposit of gypsum upon the west, and in what is apparently the bed of an ancient river or lake, exists a deposit of carbonate and sulphate of soda, carrying about 15 per cent of carbonate of soda, 20 per cent of sulphate of soda, 4 per cent of borax, the remainder being mostly moisture and sulphate of lime. This deposit is about 1 mile wide and 5 miles in length. Its depth is unknown. At from 2 to 4 feet below the surface water is encountered, which is largely impregnated with these minerals and with chloride of sodium. Explorations have been made in several places throughout the deposits by driving down tubes to a depth of from 20 to 30 feet without discovering any change in the character of the deposit.

There is also a considerable deposit of carbonate of soda near Manzano, in the county of Valencia, and near Wagon Mound, in the county of Mora.

KAOLIN AND FIRE CLAYS.

These valuable minerals have been found in considerable quantities in several places in the Territory. The most notable deposit of fire clay worked to any considerable extent is situated near Socorro, in Socorro County. There has been a recent discovery of a large deposit of kaolin and fire clays in the suburbs of Santa Fe of superior quality. Efforts are now being made to utilize these clays at the Territorial prison. In the immediate vicinity there is also found a considerable bed of graphite, and it is hoped that in the near future it will be extensively worked.

ALUM.

A large deposit of alum has been opened on the Gila River. It is reported to be of great commercial value, and is now being worked to some extent. With proper railroad facilities these alum beds and the beds of gypsum and soda heretofore referred to would become the most productive properties in the Territory.

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PRECIOUS STONES.

In describing the mineral resources of New Mexico, the native precious stones are worthy of mention, as they are steadily rising in popular estimation and production.

Traditionally this Territory has been noted as having produced some remarkable gems, and recent developments are proving the older records to have been correct. It is only recently that scientific research and skilled labor have been directed to this purpose. The result is a steady increase of expert prospecting and labor in development, which, though only fairly begun, has resulted in finding many varieties of precious and semiprecious stones.

The estimated production and value of gems up to the year 1890 can be found in the census reports of that year. It is worthy of remark that the amount and the value thereof are understated, the facilities for correct and full information being limited.

Since that time the annual product has more than doubled, and is still increasing. Diligent prospecting has revealed new deposits, and the industry bids fair at present to become a large item in the economic resources of the Territory.

The gems found in New Mexico, in the order of their value, are emeralds, there being one now cut in Santa Fe which weighs 1 karat and is of fine quality. Many other smaller ones have been found, although no expert search has been made for them thus far. A very recent find, next in value, is a gem resembling the ruby in respect of color, brilliancy, and hardness. Of these, quantities are found frequently associated with peridots and garnets, but differing from the latter in being harder and of a different specific gravity and form of crystallization. The range of color is from a light rose or pink to that of a bright red garnet. Though no very large ones have been found, yet gems cut from those found have sold at $20 to $50 each, while their numbers and merits have made them a decided acquisition to the list of precious stones of New Mexico, which must, when more widely known, create for them a large demand.

The turquoise deposits of the Territory are too well known to require an extended description. It is only necessary to state that while some of these gems have been famed in Europe for centuries, yet in the United States they have never met the appreciation their merits and rank as gems deserve until the last few years; now they are in great demand, having been pronounced by experts equal, if not superior, to the Persian turquoise. There are single gems from Santa Fe County, now in New York, held as high as $4,000, and some in Santa Fe of nearly equal size and quality.

This sudden appreciation has given a stimulus to further research, resulting in finding large turquoise deposits near Silver City, in the Hatchitas and Cow Spring mountains, of great merit. One of the new discoveries is phenomenally large, considering quantity of production, size, and color of stones found in it.

In addition to the above-named are found native euclase, the so-called Montana sapphires, garnets, milk and fire opals, peridots, a great variety of fine agates, besides petrified woods, fit for inlaying, mosaic work, or jewelry. Gold and silver quartz, valuable for fine work in jewelry, are produced from various mines.

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COAL.

Chief among them is that of coal, of which there are large beds of bituminous situated in nearly every county in the Territory, and an extensive body of anthracite coal near Cerrillos, in southern Santa Fe County.

WEALTH IN SULPHUR.

BEDS CLOSE TO A PECOS VALLEY STATION.

The following article on the sulphur beds lying just west of Guadalupe, on the Pecos Valley road, is taken from the El Paso Herald. A number of Eddy parties are interested in the deposits, having been engaged for some time in investigating them. During the past two months E. Miall Skeats, of this city, has spent considerable time there, and The Argus believes that he is very sanguine of the results. The article from the Herald is as follows:

"One of the greatest sources of the as yet undeveloped mineral wealth of El Paso County lies in the extreme northeastern portion of the county, and is in the form of almost limitless deposits of nearly pure sulphur, easily accessible and requiring but little capital (chiefly for refining works) to place it on the market as a finished product. These deposits fill numerous patelliform basins or craters of extinct volcanoes on the plains southeast of the southern point of the Guadalupe Mountains, beginning 2 to 3 miles south of Delaware Creek and 12 miles west of Guadalupe Station, on the Pecos Valley Railroad. So far they are known to exist on some twelve or fourteen sections of land, and are believed to extend over many more, though but twelve claims have been located and these but superficially prospected by shafts usually from 12 to 15 feet in depth, only one being as deep as 30 feet, and all these in nearly pure sulphur to the greatest depth attained. The region round about might be called a prairie, though dotted here and there with low hills overgrown with scrub cedar and covered with the finest grasses. Numerous springs of pure water exist in the vicinity, and Tinnin's great spring ranch lies 6 miles south.

"These basins or craters are usually from 600 to 700 feet in diameter, and toward the center it declines to a depth of 3 or 4 feet, the surface being a thin covering of blackened earth, strongly impregnated with sulphur, and presenting the appearance of having been blackened with sulphuric acid. In one shaft, sunk in the hope of striking water, a liquid was encountered at a depth of 15 feet, but on being tasted it proved to be very strong sulphuric acid, and when the taster hurriedly ejected it from his mouth, adulterated with saliva as it was, it stained deeply and did some injury to his coat sleeve. It is believed, however, that this acid is small in quantity, detained by some solid rock basin, and that it was formed by percolating rain water taking sulphur in solution as it descended.

"As indicating the process by which these vast masses of sulphur were deposited, time has left no trace. As the country round about is gypsum, it might be inferred that both minerals were deposited from sulphur springs, or springs containing sulphide of hydrogen, which sometimes deposits sulphur by the partial oxidation of the hydrogen, and gypsum by the more complete oxidation of the hydrogen. Such springs flowing into a basin lake then covering the region would pour limitless quantities of sulphide of hydrogen (only partially oxidized) down the craters of extinct volcanoes, thus ultimately filling them with sulphur to unknown and probably very great depths, while the impregnated water spread out in the shallow lakes would become more completely oxidized and deposit the gypsum beds now found surrounding the craters. Or, as the craters of extinct volcanoes (as in the case of Popocatapetl) are frequently found plugged with sulphur, it may be that this mineral, in a sublimated state, arose from great depth and was precipitated on the lips and walls of the crater until the orifice was filled. But, whatever the process of deposition may have been, it is certain that these deposits of sulphur are of such vast extent and purity that El Paso is destined to rival the famous sulphur deposits of Sicily, from which island the United States alone formerly imported $50,000,000 worth of sulphur annually.

"Near the surface of the basins in question, where more or less earthy matter has become mixed with the mineral, and even pebbles of foreign rock are embedded, the mass shows only about 60 per cent sulphur, but deeper down the sulphur is found almost pure (98 per cent) and in massive beds, finely lined with varying colors and resembling the finest yellow clay. Twelve different companies have already treated and partially prospected claims, and one of these companies

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has projected a railroad from Guadalupe Station, on the Pecos Valley Railroad, to the mines, there being already a fine wagon road to the south, extending 30 miles west from the Pecos Valley road. As these deposits are numerous, doubtless of great extent or depth, and are known to be exceedingly rich, the field is an inviting one for prospectors and small capitalists. The material can be mined and refined at little cost, and can be marketed at wholesale at $32 per ton for roll and $33 to $35 per ton for flour."

REPORT OF THE MINE INSPECTOR.

SILVER CITY, N. MEX., *August 24, 1899.*

SIR: In compliance with section 3 of an act of Congress approved March 3, 1891, entitled "An act for the protection of the lives of miners in the Territories," I herewith beg leave to submit the seventh annual report of this office, covering the fiscal year ended June 30, 1899.

JOHN W. FLEMING,
United States Mine Inspector for the Territory of New Mexico.

His Excellency MIGUEL A. OTERO,
Governor, Santa Fe, N. Mex.

BERNALILLO COUNTY.

OTERO MINE.

[Alex. Bowie, general manager; John Stewart, superintendent; James W. Bowie, mining engineer.]

Located about 2¼ miles in an easterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Caledonian Coal Company. Kind of coal, lignite; thickness of vein, average, 4 feet and 6 inches; total output, fiscal year, 96,473 tons; estimated value of output, $144,709.50; depth of slope, 1,400 feet; total value of improvements, $45,000; average number of men employed inside, 139; average number of men employed outside, 31; average number of boys employed inside, 2; number of days mine was operated, 233; number of tons used at mine, 1,500; where coal is marketed, Santa Fe Pacific Railroad, Santa Fe, Prescott and Phœnix Railroad, and California.

This mine is situated on a spur about 1 mile in length, connecting with the Santa Fe Pacific Railroad near Gallup station; is operated by a slope 1,400 feet in length, and has a capacity of about 700 tons per day. This mine is ventilated by an air shaft and furnace.

RECORD OF INSPECTION.

September 26, 1898.—On this date I inspected the underground workings of the Otero mine. I measured 12,960 cubic feet of air entering the mine per minute, and measured 13,750 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine, and found the workings of the mine well timbered and in good condition.

November 16, 1898.—I again inspected the Otero mine. I measured 17,600 cubic feet of air entering the mine per minute, and measured 18,360 cubic feet of air returning per minute through the return air course. I found the ventilation very good throughout the workings, and found the working places well timbered and in good condition.

January 12, 1899.—I again inspected the Otero mine. I measured 11,670 cubic feet of air entering the mine per minute, and measured 12,960 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine, and the workings well timbered and in good condition.

April 13, 1899.—I again inspected the Otero mine. I measured 15,780 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found them in good condition. On this date the mine was not being operated.

May 26, 1899.—I again inspected the Otero mine. I measured 22,150 cubic feet of air entering the mine per minute, and measured 22,750 cubic feet of air returning per minute. I then inspected the workings of the mine and found them well timbered and in good condition. On this date the mine was not being operated.

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THATCHER MINE.

[Alex. Bowie, general manager; John Stewart, superintendent; James W. Bowie, mining engineer.]

This is a new mine located about 3 miles in an easterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Caledonian Coal Company, and commenced to ship coal on January 1, 1899. Kind of coal, lignite; thickness of vein, average, 4 feet and 6 inches; total output, January 1 to June 30, 1899, 11,311 tons; estimated value of output, $16,967; depth of slope, 1,100 feet; value of improvements, $25,000; average number of men employed inside, 26; average number of men employed outside, 6; number of boys employed inside, 1; number of days mine was operated, 117; number of tons of coal used at mine, 150; where coal is marketed, Santa Fe Pacific Railroad, Santa Fe, Prescott and Phœnix Railroad, and California.

This mine is situated on a spur about 2 miles in length, being an extension of the spur on which the Otero mine is situated, and is connected with the Santa Fe Pacific Railroad near the station of Gallup. This mine is ventilated by an air shaft, and is operated by a slope 1,100 feet in length. The coal is hoisted by steam power, and has a capacity of about 300 tons per day.

RECORD OF INSPECTION.

January 7, 1899.—On this date I visited and inspected the mine known as the Thatcher mine. I measured 3,840 cubic feet of air entering the mine per minute, and measured 3,915 cubic feet of air returning per minute. I found the workings of this mine well ventilated and in good condition.

April 8, 1899.—I again inspected the Thatcher mine. I measured 5,040 cubic feet of air entering the mine per minute, and measured 5,460 cubic feet of air returning per minute. I found the workings of the mine in good condition.

GALLUP MINE.

[W. M. Weaver, general manager; Hugh McGinn, superintendent; P. O'Neil, pit boss.]

This mine is located about 3 miles northwest of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company, and is situated on a spur about three miles in length, connecting with the Santa Fe Pacific Railroad near Gallup Station. Kind of coal, lignite; thickness of vein, 6 feet; total output, fiscal year ended June 30, 1899, 151,525 tons; estimated value of output, $212,000; depth of slope, 3,000 feet; value of improvements, this year, $4,117.43; average number of men employed inside, 250; average number of men employed outside, 20; average number of boys employed inside, 5; number of days mine was operated, 241; number of tons used at mine, 903; where coal is marketed, New Mexico, Arizona, Texas, California, and Old Mexico.

RECORD OF INSPECTION.

September 28, 1898.—On this date I inspected the mine known as the Gallup mine. The fan was running 103 revolutions per minute, and I measured 43,740 cubic feet of air entering the mine per minute, and measured 44,500 cubic feet of air returning per minute through the return air course. I found the miners working too far in advance of the air in the first right cross entry, and ordered the superintendent to have a crosscut (air way) driven from the face of the entry to the air course. The superintendent had the work of driving the crosscut commenced at once. Since my previous visit to this mine a new air shaft has been sunk, which connects with the face of No. 15 left entry and has greatly improved the ventilation throughout the workings on said entry.

November 18, 1898.—I again inspected the machinery belonging to the Gallup mine. I found one of the boilers in bad condition, and so informed the superintendent. I was informed by the superintendent that a new boiler had just arrived and men would be put to work to remove the old boiler, and the new one would be put in as soon as possible.

November 19, 1898.—I inspected the underground workings of the Gallup mine. The fan was running 60 revolutions per minute, and I measured 29,750 cubic feet of air entering the mine per minute, and measured 29,960 cubic feet of air returning per minute through the return air course. I found the mine well ventilated, and found the workings of the mine well timbered and in good condition.

January 10, 1899.—I again inspected the Gallup mine. The fan was running 85 revolutions per minute, and I measured 46,200 cubic feet of air entering the mine per minute and measured 47,800 cubic feet of air returning per minute. I found the ven-

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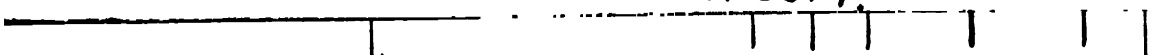
THERE ARE SEVERAL SMALL VEINS SHOWING IN CROP LINES ABOVE THOSE GIVEN IN THIS SECTION. BUT THEY HAVE NEVER BEEN FULLY PROSPECTED.—

A COPY.



SECTION OF STRATA OF THE
GALLUP COAL Co.'s No. 8.

SCALE

NOTE.—
THE BLACK DIAMOND MINE IS WORKING A VEIN 4 TO 6 FEET THICK, WHICH IS UNDER THOSE GIVEN ABOVE. ALSO A 5 FOOT VEIN LOCATED BY DRILL HOLE IN THE BOTTOM OF THE CROWN POINT SHAFT WHICH IS STILL BELOW THE DIAMOND VEIN.

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tilation good throughout the workings of the mine, and found the workings well timbered and in good condition.

April 12, 1899.—I again inspected the Gallup mine. I measured 27,400 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found them in good condition. The mine was not being operated on this date.

May 29, 1899.—I again inspected the Gallup mine. The fan was running 90 revolutions per minute, and I measured 33,000 cubic feet of air entering the mine per minute. I then inspected No. 11 right entry, No. 1 straight entry, No. 1 left entry, and No. 1 cross entry. I found the air measurements to be as follows: Cubic feet of air traveling per minute in No. 1 straight entry, 7,400; cubic feet of air traveling per minute at face of No. 1 straight entry, 1,400; No. 1 cross entry, 5,080 cubic feet; intake to No. 1 left entry, 10,500 cubic feet; last crosscut near face of No. 1 left entry, 1,200 cubic feet. I found considerable coal dust in the entries and ordered it loaded into pit cars and hauled out of the mine.

May 30, 1899.—I inspected the machinery belonging to the Gallup mine and found the same in good condition.

SUNSHINE MINE.

[Hugh McGinn, superintendent; W. M. Weaver, general manager.]

This mine is located about 1½ miles north of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 5 feet; total output, fiscal year ended June 30, 1899, 27,723 tons; estimated value of output, $39,000; depth of slope, 2,100 feet; value of improvements this year, not given; average number of men employed inside, 120; average number of men employed outside, 5; number of days mine was worked during year, 154; where coal is marketed, New Mexico, California, and Arizona; number of tons used at mine, 709.

This mine is located on a railroad spur 1½ miles in length, connecting with the Santa Fe Pacific Railway near Gallup Station. Is operated by a slope and ventilated by a 12-foot Crawford & McCrimmon fan. This mine has not been operated since February 15, 1899.

RECORD OF INSPECTION.

September 27, 1898.—On this date I inspected the mine known as the Sunshine mine. The fan was running 85 revolutions per minute, and I measured 23,520 cubic feet of air entering the mine per minute and measured 24,240 cubic feet of air returning per minute. At the time of my visit to the mine a shaft had been raised from the Sunshine vein of coal to the Crown Point vein, a distance of 33 feet, making connection between the two veins. A good ladder way was placed in the shaft, thus making a good traveling way for the miners. I found the workings of the mine well ventilated and in good condition.

November 14, 1898.—I again inspected the mine known as the Sunshine mine. The fan was running 80 revolutions per minute, and I measured 28,800 cubic feet of air entering the mine per minute and measured 30,240 cubic feet of air returning through the return air course. I found the miners in Nos. 3 and 4 rooms on the north entry working in advance of the air, and ordered the pit boss to have a crosscut (air way) driven between the rooms, so as to give the air a chance to circulate up to the face of the room and give the miners good fresh air in which to work; otherwise I found the workings of the mine in good condition.

January 9, 1899.—I again inspected the Sunshine mine. The fan was running 72 revolutions per minute, and I measured 25,600 cubic feet of air entering the mine per minute and measured 27,840 cubic feet of air returning per minute. I then inspected the workings of the mine, and found the ventilation good throughout the workings. I found a set of timbers in the slope broken and ordered them to put in a new set; otherwise the mine was in good condition.

April 15, 1899.—I again inspected the Sunshine mine. I inspected the air courses and hauling roads and found the same in good condition. On this date the mine was not being operated, and I was informed by the superintendent that the mine was closed down on February 15. I then informed the superintendent to keep the traveling way open between the Sunshine and Crown Point mines, so that in case that anything should happen to the Crown Point shaft, the miners could come through the shaft connecting the Sunshine and Crown Point mines and come out on the Sunshine slope.

CROWN POINT MINE.

[Hugh McGinn, superintendent; W. M. Weaver, general manager.]

This mine is located about 3 miles in a northerly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 3 feet 6 inches to 5 feet; total output,

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fiscal year ended June 30, 1899, 45,490 tons; estimated value of output, $63,700; depth of shaft, 225; value of improvements this year, not given; average number of men employed inside, 110; average number of men employed outside, 10; average number of boys employed inside, 3; number of days mine worked this year, 239; where coal is marketed, New Mexico, Arizona, and California.

This mine is located on a railroad spur 3 miles in length, connecting with the Santa Fe Pacific Railway near Gallup Station. Is operated by a double compartment shaft 225 feet deep; capacity, about 250 tons per day; ventilated by a 12-foot Crawford & McCrimmon fan and an air shaft.

RECORD OF INSPECTION.

September 24, 1898.—On this date I inspected the machinery belonging to the Crown Point mine. I found the hoisting engine, boilers, ropes, and cages in good condition. On this date the mine was not being operated.

November 17, 1898.—I again inspected the Crown Point mine. The fan was running 80 revolutions per minute, and I measured 15,510 cubic feet of air entering the mine per minute, and measured 16,200 cubic feet of air returning per minute. I found the ventilation very good throughout the workings of the mine. I found the traveling road leading to the escape shaft in bad condition, caused by rock falling from the roof of the roadway, and I ordered the pit boss to have the traveling road cleared of all falls of rock and to keep said traveling road in good condition at all times. The pit boss informed me that the work would be commenced at once and continued until the falls of rock were all removed; otherwise I found the mine in good condition.

January 11, 1899.—I again inspected the Crown Point mine. The fan was running 70 revolutions per minute, and I measured 16,000 cubic feet of air entering the mine per minute, and measured 16,800 cubic feet of air returning per minute. I found very little air traveling at the working faces of No. 7 and 8 entries, and ordered the pit boss to have all stoppings along the line of said entries made air-tight, so as to force the air up to the face of the entries. The pit boss informed me that he would have the work commenced on that night and would continue the work until the air was forced up to the face of the entries.

April 14, 1899.—I again inspected the Crown Point mine. The fan was running 60 revolutions per minute, and I measured 18,400 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found the roadway leading to the escape shaft in bad condition, and ordered said roadway cleared of all falls of rock. The pit boss informed me that the work would be commenced at once. The mine was not being operated on this date.

May 27, 1899.—I again inspected the Crown Point mine. The fan was running 60 revolutions per minute, and I measured 7,150 cubic feet of air entering the mine per minute, and measured 7,650 cubic feet of air returning per minute. I then inspected the workings of the mine, and found some water in the main air course and ordered it pumped out. I also ordered the fan speeded up to 80 revolutions per minute.

CATALPA MINE.

[Hugh McGinn, superintendent; W M. Weaver, general manager.]

This mine is located about 3 miles in a southeasterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by the Crescent Coal Company. Kind of coal, lignite; thickness of vein, 6 feet; total output, fiscal year ended June 30, 1899, 58,061 tons; estimated value of output, $81,280; depth of slope, 1,000 feet; value of improvements (total), $10,039.84; average number of men employed inside, 100; average number of men employed outside, 5; number of days mine was operated, 236; where coal is marketed, New Mexico, Arizona, and California.

This mine is situated on a railroad spur, 3 miles in length, connecting with the Santa Fe Pacific Main Line near Gallup Station, and with the development work done last year has a capacity of about 700 tons per day, and is ventilated by a furnace. This mine was operated 236 days this year as against 46 days last year.

RECORD OF INSPECTION.

September 23, 1898.—On this date I inspected the mine known as the Catalpa mine. I measured 8,400 cubic feet of air entering the mine per minute and measured 8,640 cubic feet of air returning per minute. I found the workings of the mine well ventilated and found the mine in good condition.

November 15, 1898.—I again inspected the Catalpa mine. I measured 10,150 cubic feet of air entering the mine per minute and measured 11,520 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine and found the workings of the mine well timbered and in good condition.

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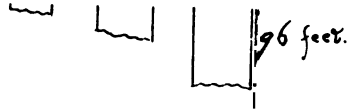

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January 5, 1899.—I again inspected the Catalpa mine. I measured 8,910 cubic feet of air entering the mine per minute and measured 9,600 cubic feet of air returning per minute. I then inspected the workings of the mine and found the miners in the first right entry working too far in advance of the air and ordered a crosscut (air way) driven from the face of the entry to the main air course. The pit boss informed me that the work would be commenced at once.

April 10, 1899.—I again inspected the Catalpa mine. I measured 7,980 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found the workings in good condition. I found very few props on hand at the mine and ordered the pit boss to keep plenty of props in readiness for the miners.

May 25, 1899.—I again inspected the Catalpa mine. I measured 6,300 cubic feet of air entering the mine per minute and measured 6,730 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine. I found some loose rock in the roof of the main slope and ordered it taken down and the place timbered. Otherwise I found the mine in good condition.

The Gallup, Sunshine, Crown Point, and Catalpa mines are all owned and operated by the Crescent Coal Company, and the total number of tons produced by the said four mines during the fiscal year ended June 30, 1899, is 282,799; the total estimated value of this output is $395,980. At the Crown Point and Catalpa mines slack is used for steam purposes, and at the Gallup and Sunshine mines 1,612 tons of coal was used during the fiscal year for steam purposes. The workings of the Crescent Coal Company's mines are free from fire damp; the coal is a soft lignite, good for steam and domestic purposes.

W. A. CLARK COAL MINE.

[W. L. Bretherton, agent.]

This mine is located about 5 miles west of the town of Gallup, Bernalillo County, N. Mex. Owned and operated by W. A. Clark. Kind of coal, lignite; thickness of vein, 5 to 7 feet; total ouput, fiscal year ended June 30, 1899, 46,986 tons; estimated value of output, $73,158.62; depth of slope, 1,500 feet; value of improvements, not given; average number of men employed inside, 60; average number of men employed outside, 30; number of days mine was operated, 270; number of tons used at mine, 800; where coal is marketed, Arizona and California.

This mine is situated on a spur connecting with the Santa Fe Pacific Railway, about 4 miles west of Gallup Station. Is operated by a slope 1,500 feet in length and has a capacity of about 500 tons per day. This property consists of 1,280 acres of coal land, which carries several seams of coal, only one seam being worked at present. The workings are dry and free from gas or fire damp. The coal is a soft lignite, good for steam and domestic purposes.

MACHINERY AND EQUIPMENTS.

This mine is equipped with two 100-horsepower boilers, one 150-horsepower engine, and one 25-horsepower engine, 2 electric Westinghouse generators, furnishing a 250-volt current; 1 No. 6 Connerville blower to carry off coal slack, 1 electric and 1 steam deep-well pump, to furnish the necessary water for the town of Clarkville, located at the mines, and for steam use. The mining is done by 2 electric undercutting machines, which cut 5 and 6 feet deep, and 1 rib-shearing machine, made by the Link-Belt Machinery Company; also 1 Morgan-Gardiner electric drill for shooting coal down.

Haulage is done, first, by horses entirely, and by a link-belt 10-ton electric motor, which hauls out on the tipple over a 5 per cent grade. The tipple is the latest Mitchell patent automatic dumper. The pit scales are 10 feet long, large and strong, for pit cars of Eastern make. This mine is equipped with shaking screens, which are used for assorting the coal into 4 different sizes, as desired, and for thoroughly cleaning out all slack.

VENTILATION.

This mine is ventilated by various air shafts raised through from the vein of coal to the surface, which so far has proved very successful.

IMPROVEMENTS.

The improvements consist of 50 dwellings, mostly built of adobe, and are used for residences, which are occupied by the employees of the company: also, a large power house. The store building is built of brick, being a 2-story building, is large and commodious, with a good, deep basement and contains a general stock of merchandise for the town; also, a large boarding house run by the company for the convenience of its employees. The company is erecting a brick building, which will be

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supplied with literature and used for a reading room. A large schoolhouse is located in the town, in which school is held during the greater portion of each year, the average attendance being 40 for the last scholastic year.

RECORD OF INSPECTION.

September 22, 1898.—On this date I inspected the mine known as the W. A. Clark mine. I measured 6,720 cubic feet of air entering the mine per minute, and measured 6,840 cubic feet of air returning per minute. I found the mine well ventilated and in excellent condition.

November 12, 1898.—I again inspected the W. A. Clark mine. I measured 7,560 cubic feet of air entering the mine per minute, and measured 7,770 cubic feet of air returning per minute. I found the mine well ventilated and found the workings in good condition.

January 6, 1899.—I again visited the mine known as the W. A. Clark mine. I measured 4,800 cubic feet of air entering the mine per minute, and measured 5,440 cubic feet of air returning per minute. The ventilation and workings of the mine were in good condition.

April 7, 1899.—I again visited and inspected the W. A. Clark mine. I measured 4,320 cubic feet of air entering the mine per minute, and measured 4,680 cubic feet of air returning per minute. The mine was in good condition.

May 24, 1899.—I again inspected the mine known as the W. A. Clark mine. I measured 11,200 cubic feet of air entering the mine per minute, and measured 12,000 cubic feet of air returning per minute. I found the mine well ventilated and in good condition.

STEWART MINE.

[William Stewart, manager.]

This mine is located one-half mile north of the town of Gallup, Bernalillo County, N. Mex.; owned by the Santa Fe Pacific Railway Company, and is operated under lease by William Stewart. Kind of coal, lignite; thickness of vein, 6 feet; total output, fiscal year ended June 30, 1899, 2,000 tons; estimated value of output, $3,000; value of improvements, $2,000; depth of slope, 400 feet; average number of men employed inside, 6; average number of men employed outside, 3; number of days mine worked during year, 200; where coal is marketed, Arizona, California, and New Mexico.

This mine is a new mine, which has been operated in a small way since July 1, 1898. The coal is hauled in wagons to Gallup Station, where it is shipped to points in Arizona, California, and New Mexico, and is also sold to the local trade in the town of Gallup. The mine is ventilated by an air shaft and has a capacity of about 50 tons per day.

RECORD OF INSPECTION.

November 11, 1898.—On this date I visited and inspected the mine known as the Stewart mine. I found the workings of the mine in good condition. At the time of my visit only 6 miners were employed in the mine.

January 14, 1899.—I again visited and inspected the mine known as the Stewart mine. I measured 2,160 cubic feet of air entering the mine per minute, and measured 2,240 cubic feet of air returning per minute. I found the workings of the mine well ventilated and found the mine in good condition.

April 6, 1899.—I again inspected the Stewart mine. I measured 2,100 cubic feet of air entering the mine per minute. I then inspected the underground workings of the mine, found the ventilation good, and found the mine in good condition.

ROCKY CLIFF MINE.

[Stephen Canavan, general manager.]

This mine is located about 2 miles in an easterly direction from the town of Gallup, Bernalillo County, N. Mex. Owned and operated by Stephen Canavan. Kind of coal, lignite; thickness of vein, 4 feet and 6 inches; total output, fiscal year ended June 30, 1899, 5,000 tons; estimated value of output, $7,500; depth of slope, 900 feet; total value of improvements, $6,000; average number of men employed inside, 8; average number of men employed outside, 2; number of days mine was operated during year, 200; where coal is marketed, California, and Gallup, N. Mex.

This mine is located on a railroad spur connecting with the Santa Fe Pacific Railway, near Gallup Station. The mine is ventilated by a furnace and has a capacity of 150 tons per day.

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RECORD OF INSPECTION.

September 29, 1898.—On this date I inspected the mine known as the Rocky Cliff mine. At the time of my visit to the mine there were only five miners employed therein. I inspected the air course and all the underground workings and found the mine in fair working condition.

November 10, 1898.—I again inspected the Rocky Cliff mine. I measured 4,320 cubic feet of air entering the mine per minute, and measured 4,500 cubic feet of air returning per minute. I found the workings of the mine in good condition.

January 4, 1899.—I again inspected the Rocky Cliff mine. I measured 3,000 cubic feet of air entering the mine per minute, and measured 3,255 cubic feet of air returning per minute. I found the workings of the mine in good condition.

April 11, 1899.—I again inspected the Rocky Cliff mine. I measured 2,050 cubic feet of air entering the mine per minute. I then inspected the workings of the mine; found the workings well ventilated and in good condition.

May 23, 1899.—I again inspected the Rocky Cliff mine. I measured 1,750 cubic feet of air entering the mine per minute, and measured 1,925 cubic feet of air returning per minute. I found the workings of the mine in good condition.

LINCOLN COUNTY.

OLD ABE COAL MINE.

This is a new mine located near White Oaks, Lincoln County, N. Mex. Owned and operated by the Old Abe Company, of which John Y. Hewitt is president, William Watson, vice-president; Levin W. Stewart, secretary. Kind of coal, bituminous; thickness of vein, average, 3½ feet; total output, fiscal year ended June 30, 1899, 1,469 tons: estimated value of output, $3,672.50; depth of slope, 250 feet; value of improvements, $1,100; average number of men employed inside, 3; average number of men employed outside, 1; number of days mine was operated, 172; where coal is marketed, at the town of White Oaks, N. Mex.

Work was commenced on this mine on December 19, 1898, and owing to the location of the mine, being a great distance from the railroad and only a few men being employed, I did not deem it necessary to inspect the mine. I received the above report from the secretary of the company.

NEW MEXICO FUEL COMPANY.

[Mines at Gray, N. Mex.; general offices, Alamogordo, N. Mex.]

The coal fields under the management of the New Mexico Fuel Company are situated in Lincoln County, N. Mex., 165 miles from El Paso, Tex., along the line of the El Paso and Northeastern Railroad, which will be completed to the mines on or about October 1. On July 8, 1899, I addressed a letter to W. A Hawkins, esq., of El Paso, Tex., attorney for the New Mexico Fuel Company, requesting him to forward me a report of the coal mines being opened by the company. In reply to this letter I received the following report from T. L. Welles, superintendent:

GRAY, N. MEX., *July 14, 1899.*

DEAR SIR: Your esteemed favor of the 8th instant to W. A. Hawkins, esq., of El Paso., Tex., has been forwarded to me as superintendent of the New Mexico Fuel Company, which is the title of the company opening the mines referred to.

On April 1 of the current year the company started the Salado Camp, and on April 3 began work on No. 1 slope on the Akers or lower seam of coal. The size of the timbers in this slope are in the clear 8 feet cap, 6 feet 2 inches legs on a 2-inch batter, giving 6 feet clear of tie, with 10 feet at bottom. Gauge of track is 36 inches. The average section of seam so far is 4 feet 6½ inches, of which 7 inches is a fire-clay slate, leaving 3 feet 11½ inches of coal. The slope has been driven a distance of 345 feet from the apex, of which 22 feet is open cut and 140 feet double timbered.

The average pitch of seam is 14 degrees. An air shaft 10 by 12 feet was sunk down 34 feet to the coal, at a distance of 155 feet from the mouth of the slope, and has been connected with the slope air ways by a larger air passage. The three-entry system is the one in use, the left-hand air way having a large air bridge to connect it with the one on the right, which runs up to the air shaft. At present a small furnace is in use at the bottom of the shaft, and furnishes abundant air at all times. A fan is on the ground ready for use when occasion may require.

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The coal is of the coking variety, and shows the following analysis:

Water	0.775
Volatile matter	41.250
Fixed carbon	46.950
Ash	11.025
	100.000
Sulphur	.735

This was from a sample taken from the whole height of the seam.

The latter part of June the company started a pair of 10 by 10 inch friction hoists, which are doing very satisfactory work, and will be amply sufficient for sinking purposes. The company has no other outside improvements but a small carpenter and blacksmith shop, with the exception of a pipe line of 3 and 2 inch pipe, which brings a supply of water from springs in the Carracita Canyon, at a point 1¼ miles above the mine. At present the company is working 17 men, including a foreman and night-shift boss, in this slope, and has been driving on double shift from the start.

On June 1 the company started slope No. 2 on the Ayers or upper seam and distant about 3,000 feet from No. 1 slope. The company expect to bring the coal from this mine to the tipple at No. 1 slope by means of a tramroad and small locomotive. No. 2 slope is now down 140 feet from the apex, of which 92 feet is double timbered and the balance open cut, on a pitch of 14 degrees. Seam of coal at face shows 5 feet 7 inches, with 5 feet of fine coal. Sinking is carried on at this slope with a whim. In the near future sinking will be done with a hoisting engine and boiler.

The analysis, from a complete section of the vein, shows the following results:

Water	1.275
Volatile matter	38.225
Fixed carbon	47.100
Ash	13.400
	100.000
Sulphur	.645

The company is working 6 men and a foreman in this slope, besides 25 men employed in various capacities outside.

Mr. Hills, the geologist of the Colorado Fuel and Iron Company, who examined the property, constructed a coke oven of adobe bricks and coked some of the coal from the Akers seam, which gave the following analysis:

Water	1.450
Volatile matter	3.900
Fixed carbon	76.825
Ash	17.825
	100.000
Sulphur	.611

You ask for the valuation of our improvements, but, as I said above, the company has little as yet which could properly come under that head. The cost of the operation so far has been about $15,000, which includes a supply of tools sufficient to last some time, and also machinery which is not yet upon the ground. The company propose to erect a washer and a block of coke ovens as soon as practically can be done. In addition to this operation the company has a 200-foot proving slope down on the upper seam, at a point 3 miles below Malagra Hill, but did not find enough coal to warrant an operation.

When we get a map of our workings complete, shall take pleasure in sending you a copy.

Yours, very truly,

NEW MEXICO FUEL COMPANY,
T. L. WELLES, *Superintendent.*

Mr. J. W. FLEMING,
United States Mining Inspector, Silver City, N. Mex.

COLFAX COUNTY.

BLOSSBURG MINE.

[J. A. Wiggs, superintendent; J. Van Houten, vice-president; M. M. Walsh, pit boss.]

This mine is located at the town of Gardiner, Colfax County, N. Mex., and about 4½ miles in a westerly direction from the town of Raton, N. Mex., where the general offices of the company are located. Owned and operated by the Raton Coal and

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Coke Company. Kind of coal, bituminous; thickness of vein varies from 6 to 8 feet; total output fiscal year ended June 30, 1899, 308,316 tons; estimated value of output this year not given; average number of men employed inside, 125; average number of men employed outside, including men employed on construction work, etc., 100; average number of boys employed inside, 15; length of new drift (main diagonal), 2,700 feet; number of days mine was operated, 300; where coal is marketed, New Mexico, Arizona, and Mexico; number tons of coal used at mine, 4,826 tons.

This mine is located on a branch of the Atchison, Topeka and Santa Fe Railroad, connecting with the main line at Dillon Station. This is the largest mine in the Territory, having a capacity of 1,500 tons per day. It is operated upon the double-entry system. Most of the coal is marketed on the New Mexico and Rio Grande divisions of the Atchison, Topeka and Santa Fe Railway Company, between Raton, N. Mex., and El Paso, Tex.; also on the Mexican Central Railway from El Paso, Tex., south, and on the Southern Pacific Railroad, from Deming, N. Mex., west.

RECORD OF INSPECTION.

September 17, 1898.—On this date I inspected the machinery belonging to the Blossburg mines. I found the machinery in good condition.

September 19, 1898.—On this date I inspected Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 right entries of the Blossburg mine No. 4 and the rooms thereon. I measured 49,550 cubic feet of air entering the mine per minute and measured 51,200 cubic feet of air returning per minute. I found the workings which I inspected well ventilated and in good condition.

September 20, 1898.—I continued my inspection of the Blossburg mine No. 4. I inspected Nos. 11 and 12 right entries and the rooms thereon. I found the ventilation good throughout the workings and found the working places in good condition.

October 19, 1898.—I inspected the mine known as the Blossburg mine No. 6. I measured 8,000 cubic feet of air entering the mine per minute. I then inspected all the working places in the mine. I found the roof of the straight entry in an unsafe condition, and ordered the pit boss to have said entry timbered with good substantial timbers.

October 20, 1898.—On this date I commenced my inspection of the Blossburg mine No. 4. I measured 39,480 cubic feet of air entering the mine per minute and measured 41,600 cubic feet of air returning per minute. I found the roof of No. 6 room on the second left entry in an unsafe condition and ordered the pit boss to have the loose rock taken down and the place timbered at once. The work was commenced and the pit boss assured me that the room would be made secure from all danger before he would allow the miners to work therein.

October 21, 1898.—I continued my inspection of the Blossburg mine No. 4. I inspected Nos. 5, 6, 7, and 8 right entries and No. 12 left entry and the workings thereon. I found the ventilation good throughout the working places. I found several rooms (which were not being worked) driven up a distance of over 200 feet without a crosscut and I ordered crosscuts driven every 100 feet in all rooms.

November 22, 1898.—I inspected the Blossburg mine No. 6. I measured 9,900 cubic feet of air entering the mine per minute. I then inspected the working places of the mine and found the workings well ventilated and in good condition.

November 23, 1898.—On this date I visited and inspected the mine known as the Blossburg mine No. 4. I measured 42,600 cubic feet of air entering the mine per minute, and measured 42,200 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine, and found the mine well timbered and in good condition.

December 13, 1898.—I visited and inspected the machinery and boilers belonging to the Blossburg mines. I found the machinery in good condition.

December 14, 1898.—I inspected the mine known as the Blossburg mine No. 6. I measured 3,960 cubic feet of air entering the mine per minute. I then inspected the working places in the mine and found the workings well ventilated and in good condition.

December 15, 1898.—I inspected the mine known as the Blossburg mine No. 4. I measured 43,180 cubic feet of air entering the mine per minute and measured 45,360 cubic feet of air returning per minute. I then inspected the working places throughout the mine and found the mine well ventilated and the workings well timbered and in good condition.

January 18, 1899.—On this date I inspected the machinery belonging to the Blossburg mines and found the machinery in good condition.

January 19, 1899.—I visited and inspected the Blossburg mine No. 6. I measured 6,380 cubic feet of air entering the mine per minute. I then inspected the air courses and working places throughout the mine and found the workings in good condition.

January 20, 1899.—I inspected the Blossburg mine No. 4. I measured 40,820 cubic feet of air entering the mine per minute and measured 42,840 cubic feet of air return-

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ing per minute. I then inspected the workings of the mine; found the mine well ventilated and in good condition.

February 20, 1899.—I inspected the Blossburg mine No. 6. I measured 7,440 cubic feet of air entering the mine per minute. I then inspected the air courses and working places in the mine and found the workings well ventilated and in good condition.

February 21, 1899.—I inspected the mine known as the Blossburg mine No. 4. I measured 42,000 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found the workings well ventilated and in good condition.

March 15, 1899.—I visited the Blossburg mine No. 4 for the purpose of inspecting room No. 2 on the fourth right entry, where a fatal accident had occurred, causing the deaths of William Lipscomb and Juan M. Rivera. (See report of fatal accidents.)

March 16, 1899.—I inspected the Blossburg mine No. 4. I measured 32,760 cubic feet of air entering the mine per minute. I then inspected Nos. 7, 8, 9, 10, 11, and 12 right entries and the workings thereon. I found room No. 11 on the seventh right entry and room No. 8 on No. 8 right entry being worked without the use of timbers, and ordered said rooms timbered before any more mining was done therein; but as usual the miners wanted to load a few more cars of coal before they commenced timbering.

I informed them that the cause of a great many fatal accidents from falls of rock in mines was caused by the miners being too anxious to load another car or two of coal before securing their working places with timbers, and ordered them to either timber their working places at once or discontinue working in said places until such time as the places were timbered. They then commenced timbering the rooms.

March 17, 1899.—I continued my inspection of the Blossburg mine No. 4. I inspected Nos. 1, 2, 3, 4, 5, and 6 left entries and the workings thereon; also, Nos. 13 and 14 right entries. I found the roof at the face of No. 1 right entry in bad condition and had the work stopped until said place was timbered. Also found room No. 15 on No. 3 left entry in bad condition, and ordered said room timbered before any more mining was done in the room. The work of timbering was commenced at once.

March 18, 1899.—I inspected the mine known as the Blossburg mine No. 6. I measured 9,280 cubic feet of air entering the mine per minute, and then inspected the workings of the mine and found the workings in good condition. I also took air measurements throughout the workings of the Blossburg mines Nos. 4 and 6, and found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake in main entry	7,680
Intake in No. 6 mine	9,280
Air traveling around face of Nos. 7, 8, 9, 10, 11, and 12 right entries, where pillars were drawn	18,400
Last crosscut between Nos. 14 and 15 left entries	13,200
Intake on No. 12 left entry	10,800
Air traveling around Nos. 6, 7, 8, and 9 right entries, where pillars are drawn	15,180
Intake on old Blossburg hauling entry	5,000
Intake to Nos. 7 and 8 right entries	12,240
Last crosscut between first and second left entries	8,320
Last crosscut between third and fourth left entries	3,600
Last crosscut between fifth and sixth left entries	3,500
Last crosscut at face of main entry	6,720
Air traveling in No. 10 right entry	8,235
Face of No. 13 right entry	8,050
Return at fan	33,600

April 18, 1899.—I inspected the mine known as the Blossburg mine No. 6. I measured 7,680 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found the workings in fair condition.

April 19, 1899.—I inspected the Blossburg mine No. 4. I measured 40,400 cubic feet of air entering the mine per minute. I then inspected the workings of the mine and found the workings in fair condition. I also inspected the machinery belonging to the mines and found the machinery in good condition.

May 16, 1899.—I visited the Blossburg mine No. 4. Just before my arrival at the mine Thomas Hermann, a miner, was killed on entry No. 20 by electric wires. (See fatal accidents reports.)

May 17, 1899.—I inspected the Blossburg mine No. 4. I inspected No. 12 left entry, also the entry known as the Blossburg main, and the workings thereon, and took air measurements. I measured 51,040 cubic feet of air entering the mine per minute and measured 56,700 cubic feet of air returning per minute. I measured 5,400 cubic feet of air traveling per minute in No. 12 left entry, and 2,800 cubic feet of air

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traveling the Blossburg main entry. I found the workings, which I inspected, in good condition.

May 18, 1899.—I continued my inspection of the Blossburg mine No. 4. I inspected Nos. 1, 2, 3, and 4 left entries and the workings thereon. I measured 13,120 cubic feet of air traveling per minute at the face of Nos. 1 and 2 left entries, and measured 4,200 cubic feet of air traveling per minute in the last crosscut between Nos. 3 and 4 left entries. I found the workings well ventilated. I found the roof of No. 15 room, on the 4th left entry, in a dangerous condition on account of the rock being loose and not being properly timbered, and ordered work stopped in said room until the room was properly timbered. The work was stopped and the timbermen were ordered to timber the room as soon as possible.

May 19, 1899.—On this date I inspected Nos. 1, 2, 3, 4, 13, and 14 left entries, also Nos. 6, 7, 8, 9, 10, 11, 12, 13, and 14 right entries of the Blossburg mine No. 4, and the workings thereon. I found the workings in good condition. I ordered the pit boss to keep a close watch on the miners and see that they kept their places well timbered.

June 21, 1899.—I inspected the machinery belonging to the Blossburg mines, and found the machinery in good condition.

June 22, 1899.—I inspected the Blossburg mine No. 6. I measured 15,750 cubic feet of air entering the mine per minute, and measured 6,750 cubic feet of air traveling through the last crosscut at the face of the main and back entries. I found the workings well ventilated. I found a place in the roof of the main entry in a dangerous condition and ordered the place timbered. The timbering was commenced at once.

June 23, 1899.—I inspected the Blossburg mine No. 4. I took air measurements throughout the workings, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Last crosscut at face of Nos. 1 and 2 left entries	15,600
Last crosscut between Nos. 3 and 4 left entries	12,000
Last crosscut between Nos. 5 and 6 left entries	3,800
Last crosscut at face of diagonal entries	8,910
Air traveling around Nos. 7, 8, 9, 10, 11, 12, 13, and 14 left entries, where the pillars were drawn	10,060
Intake on No. 11 left entry	9,600

I found the roof of No. 5 room, on the 12th right entry, and No. 13 room, on No. 11 right entry, in a dangerous condition, and ordered said rooms timbered.

June 26, 1899.—I again visited the Blossburg mine No. 4 for the purpose of ascertaining if the timbering had been done in room No. 5, on the 12th right entry, and No. 13 room, on the 11th right entry, according to my instructions of June 23. I found that said rooms had been timbered.

The above report on the Blossburg mine includes No. 4 and No. 6 mines, which are practically one mine and on the same vein, owned and operated by the same company. All haulage is done through the main diagonal entry, which is 2,700 feet in length.

DESCRIPTION OF THE PROPERTY OF THE RATON COAL AND COKE COMPANY, INCLUDING THE NEW ELECTRIC PLANT.

Lands.—There are 10,000 acres of coal land embraced in the property of the company, in which there are several seams of coal. At present, however, only one seam of coal is being worked by two mines, the Blossburg No. 4 and No. 6, both of which are drift mines on the same vein, and the workings of which are connected. The coal vein averages from 6 to 8 feet in thickness; and the mines are dry and comparatively free from gas. The coal is an excellent quality of bituminous coal.

Coke ovens.—There are at present 76 beehive coke ovens of standard size, 13 feet in diameter. There is a peculiar feature in connection with the ovens, which is quite an innovation in the West, and that is the use of a hot-air flue located between the ovens, which are double-row batteries, and which flue enables the company to economize and utilize the waste heat for generating steam. The waste heat is conducted by means of this flue and smokestacks on the boiler to the boiler plant, midway between the two batteries of ovens, and generates a large proportion of the steam power required for the operation of the electric plant.

Power.—The mines are equipped with 3 generators, aggregating 500 horsepower, using a 500-volt current. The plant is of the latest improved type, modern in every respect.

Mining.—Mining is done by a plant of 8 Morgan-Gardiner electric mining machines, undercutting the coal 7 feet in depth and 44 inches wide, 4 inches high. The time for cutting requires about four and a half minutes. Hauling from the partings in

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the mine is done by 3 electric locomotives, which are in very successful operation, economizing cost of production and facilitating a ready increase of output at all times.

Washing plant.—The washing plant, which consisted of two (400 tons capacity each) Robinson-Wiggs coal washers, with all the latest improved appliances for washing and handling 800 tons of coal per day, also the tipple, which was of the latest improved construction, using automatic dumping apparatus and other minor appliances, was burnt to the ground on the 2d day of September, 1898, causing a heavy loss to the company.

Trolley line.—There is now about 9,000 feet of trolley line in use, 3,000 feet of which runs from the month of the mine to the tipple. The trolley line for the hauling system is of No. 2/o hard-drawn copper. All partings along the hauling system inside of the mine are furnished with electric lights. The line material was all furnished by the Ohio Brass Company, of Mansfield, Ohio. All the machinery, large and small, is driven by electric motors.

Ventilation.—The mines are ventilated at present by one 25-foot diameter Guibal mine fan, driven by electric motor. The mine also has a 22-foot Guibal fan, which the company will use as a reserve, so that the mine will at all times be provided with ample ventilating capacity.

Machine shop.—A large machine shop, with modern tools, has been erected for the purpose of manufacturing and repairing all the machinery in use on the property.

Houses.—During the last fiscal year ended June 30, 1899, the company erected 50 new dwelling houses, a large hotel and hospital, which, together with the 134 dwelling houses already erected and in use by the company, afford ample accommodation for all employees.

Store.—A large brick store, 1½ stories, 75 by 120 feet, which is well supplied with merchandise, is also owned by the company.

Summary.—The property now being operated is thoroughly modern and up to date, the most complete of its kind in the West. All labor-saving appliances and devices have been introduced, which are now in successful operation at the plant, that are now known in the mining trade.

SMITH MINE NO. 2.

[Albert G. Shaw, lessee and general manager.]

This mine is located about 1 mile north of the town of Raton, Colfax County, N. Mex., owned by the Maxwell Land Grant Company, and is operated under lease by Albert G. Shaw. Kind of coal, bituminous; thickness of vein, 4 feet; total output fiscal year ended June 30, 1899, 3,631 tons; estimated value of output this year, $6,364.25; length of drift, 300 feet; value of improvements this year, $150; average number of men employed inside, 6; average number of boys employed inside, 2; number of days mine worked, 290; where coal is marketed, town of Raton, N. Mex. The product of this mine is hauled in wagons to the town of Raton, N. Mex., and retailed to the domestic trade. Capacity is about 20 tons per day. This mine is ventilated by a furnace.

RECORD OF INSPECTION.

October 18, 1898.—On this date I inspected the Smith mine No. 2. I measured 2,700 cubic feet of air entering the mine per minute and measured 2,850 cubic feet of air returning per minute. I found the workings of the mine in good condition.

December 12, 1898.—I again inspected the Smith mine No. 2. I measured 1,520 cubic feet of air entering the mine per minute and measured 1,650 cubic feet of air returning per minute. I found the workings of the mine in good condition.

February 16, 1899.—I again inspected the Smith mine No. 2. I measured 2,100 cubic feet of air entering the mine per minute and measured 2,170 cubic feet of air returning per minute. I found the workings of the mine in good condition.

March 20, 1899.—I again inspected the Smith mine No. 2. I found the workings of the mine in good condition.

May 20, 1899.—I again inspected the Smith mine No. 2. I measured 1,320 cubic feet of air entering the mine per minute. I found the workings of the mine in good condition.

July 28, 1899.—I again inspected the Smith mine No. 2. I measured 4,100 cubic feet of air entering the mine per minute and measured 2,205 cubic feet of air returning per minute. I found the workings of the mine in good condition.

MESA MINE.

This mine is located about 7 miles east of Raton, Colfax County, N. Mex., and is now operated by the Honeyfield Brothers. Kind of coal, bituminous; thickness of vein, 5 feet; total output fiscal year ended June 30, 1899, 1,100 tons. Estimated value

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of output this year, $1,925; average number of men employed at mine, 5; length of drift, 400 feet; total value of improvements, $1,000; mine in operation, 210 days; where coal is marketed, town of Raton, N. Mex.

The product of this mine is hauled in wagons to the town of Raton, N. Mex., and retailed to the domestic trade. Capacity, about 20 tons per day. Ventilation, natural.

RECORD OF INSPECTION.

October 22, 1898.—On this date I inspected the Mesa mine. I inspected the underground workings of the mine and found the workings in good condition.

December 16, 1898.—I again inspected the Mesa mine. I measured 1,500 cubic feet of air entering the mine per minute and measured 1,560 cubic feet of air returning per minute. I found the ventilation good throughout the workings of the mine and found the workings well timbered and in good condition.

LATAMORE MINE.

[G. B. Latamore, general manager.]

This is a new mine located about 6½ miles east of the town of Raton, Colfax County, N. Mex., owned and operated by G. B. Latamore.

April 21, 1899.—On this date I inspected the mine known as the Latamore mine. At the time of my visit a drift had been driven in on a vein of coal a distance of 300 feet and had one room turned. The vein of coal is 5 feet in thickness and is a fine quality of bituminous coal. I found the mine without a second opening and ordered the general manager to have the second opening made so that air could circulate up to the face of the workings. The general manager informed me that a second opening would be made as soon as possible.

June 27, 1899.—I again inspected the mine known as the Latamore mine. The second opening was not completed. I found the workings of the mine in good condition.

The product of this mine is hauled in wagons to the town of Raton, N. Mex., and retailed to the domestic trade. There are three men employed, and the mine produced during the fiscal year about 600 tons.

RIO ARRIBA COUNTY.

MONERO MINE NO. 1.

[J. H. Crist, general manager; E. A. Fiske, president.]

This mine is located at Monero, Rio Arriba County, N. Mex., on the Denver and Rio Grande Railroad. Owned and operated by the Rio Arriba Coal Company. Kind of coal, bituminous; thickness of vein, 3 feet 10 inches; total output fiscal year ended June 30, 1899, 30,000 tons; estimated value of output, $37,500; depth of slope, 1,700 feet; total value of improvements, $13,000; average number of men employed inside, 24; average number of men employed outside, 8; number of days mine was operated, 295; where coal is marketed, Denver and Rio Grande Railroad Company.

RECORD OF INSPECTION.

September 12, 1898.—On this date I inspected the mine known as the Monero mine No. 1. I measured 8,000 cubic feet of air entering the mine per minute and measured 8,400 cubic feet of air returning per minute. I found the miners working too far in advance of the air in No. 1 left entry, and ordered a crosscut (air way) driven at the face of the entry, so as to force the air to the face of the workings.

September 14, 1898.—I again visited the Monero mine No. 1 to ascertain if the crosscut had been driven at the face of No. 1 left entry, as per my instructions of September 12. I found that my instructions had been complied with and the crosscut had been driven.

October 28, 1898.—I again inspected the Monero mine No. 1. I measured 7,600 cubic feet of air entering the mine per minute and measured 8,000 cubic feet of air returning per minute. I found the workings of the mine well ventilated and in good condition.

December 9, 1898.—I again inspected Monero mine No. 1. I measured 8,800 cubic feet of air entering the mine per minute and measured 9,200 cubic feet of air returning per minute. I found the air course on the right of the slope in bad condition and ordered the air course cleared of all falls of rock. The work of clearing the air course was commenced at once. I then took air measurements at the bottom of the slope and measured 2,500 cubic feet of air traveling per minute.

February 15, 1899.—I again inspected the Monero mine No. 1. I measured 4,550

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cubic feet of air entering the mine per minute and measured 4,940 cubic feet of air returning per minute. I found very little air traveling at the face of the first left entry and ordered a crosscut driven from the face of the entry to the main air course.

June 16, 1899.—I again visited the Monero mine No. 1. I measured 6,300 cubic feet of air entering the mine per minute and measured 6,650 cubic feet of air returning per minute. I also measured 4,500 cubic feet of air per minute traveling in the air course leading to the first left entry, which was the only place being worked upon the above date. I found the ventilation good throughout the workings. I found some of the miners working in their rooms without using any timbers, and I instructed the miners to keep their working places well timbered.

MONERO MINE NO. 2.

[J. H. Crist, general manager; E. A. Fiske, president.]

This mine is located at Monero, Rio Arriba County, N. Mex., on the Denver and Rio Grande Railroad. Owned and operated by the Rio Arriba Coal Company. Kind of coal, bituminous; thickness of vein, 3 feet 6 inches; total output fiscal year ended June 30, 1899, 9,000 tons; estimated value of output, $13,600; depth of slope, 700 feet; value of improvements, $2,000; average number of men employed inside, 9; average number of men employed outside, 4; average number of boys employed, 2; number of days mine was operated, 240; number of tons used at mine, 250; where coal is marketed, for commercial uses along line of Denver and Rio Grande Railroad.

RECORD OF INSPECTION.

September 13, 1898.—On this date I inspected the mine known as the Monero mine No. 2. I measured 2,340 cubic feet of air entering the mine per minute and measured 2,400 cubic feet of air returning per minute. I found the workings of the mine in good condition

October 26, 1898.—I again inspected the Monero mine No. 2. I measured 2,660 cubic feet of air entering the mine per minute and measured 2,680 cubic feet of air returning per minute. I found the workings of the mine well ventilated and in good condition.

December 8, 1898.—I again inspected the Monero mine No. 2. I measured 4,000 cubic feet of air entering the mine per minute and measured 4,100 cubic feet of air returning per minute. I also measured 2,500 cubic feet of air per minute traveling at the bottom of the slope. I found the mine well ventilated and in good condition.

February 11, 1899.—I again inspected Monero mine No. 2. I measured 2,700 cubic feet of air entering the mine per minute and measured 2,850 cubic feet of air returning per minute. I found the return air course in bad condition, caused by falls of rock, and ordered the air course cleared of all falls of rock; otherwise the mine was in good condition.

June 15, 1899.—I again inspected the Monero mine No. 2. I found the return air course in bad condition and ordered the general manager to have the air course cleared of all falls of rock and put in good condition. The work was at once commenced.

LUMBERTON MINE.

[James Corrigan, manager.]

This mine is located about 1 mile south of the town of Lumberton, Rio Arriba County, N. Mex. Owned and operated by James Corrigan. This is a new mine, which has been operated in a small way since July, 1898. The development work consists of a drift driven in on the vein of coal a distance of 250 feet, and 3 rooms have been turned off from the drift. The vein of coal is 2 feet 8 inches in thickness and of a bituminous character. The daily production is about 10 tons The coal is hauled in wagons and sold to the local trade in the town of Lumberton, N. Mex., also to the Biggs Lumber Company, operating in Rio Arriba County.

October 27, 1898.—On this date I inspected the Lumberton mine and found the workings in good condition. On my next visit to Monero, on December 12, I was informed that this mine was closed down. No report of the production was made.

SANTA FE COUNTY.

WHITE ASH MINE.

[James Duggan, superintendent; William Graham, pit boss.]

This mine is located about 2½ miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, bituminous; thickness of vein, 5 feet 6 inches; total output fiscal year

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ended June 30, 1899, 56,000 tons; estimated value of output, $89,600; average number of men employed inside, 70; average number of men employed outside, 15; average number of boys employed inside, 3; number of days mine worked, 262; number of tons used at mine 1,200; where coal is marketed, New Mexico, Arizona, Mexico, and Texas.

This mine is situated on a branch line of the Atchison, Topeka and Sante Fe Railroad, which connects with the main line at Waldo Station.

RECORD OF INSPECTION.

September 7, 1898.—On this date I inspected the White Ash mine. I took air measurements throughout the workings and found the mine well ventilated and in good condition.

October 11, 1898.—I again inspected the White Ash mine. I took air measurements throughout the workings and found them well ventilated and in good condition.

November 29, 1898.—I again inspected the White Ash mine. I took air measurements throughout the workings of the mine and found the mine well ventilated. At the time of my visit the only work being done in the mine was the drawing of pillars, and I ordered the superintendent to keep the miners supplied with plenty of good props and timbers for the purpose of securing their working places from danger.

December 23, 1898.—I inspected the machinery of the White Ash mine and found the machinery in good condition.

January 23, 1899.—I again inspected the White Ash mine and took air measurements and found the air distributed in compliance with the law. I found four sets of timbers broken in the first right entry and ordered new timbers put in at once. The pit boss ordered the timbers brought into the mine and informed me that the work would be commenced as soon as the timbers arrived.

February 23, 1899.—I again inspected the White Ash mine and took air measurements and found the air distributed throughout the workings in compliance with the law. On this date I found the workings of the mine in good condition.

February 28, 1899.—I inspected the machinery belonging to the White Ash mine and found the machinery in good condition.

March 22, 1899.—I again visited the White Ash mine and took air measurements throughout the workings and found the workings well ventilated. I found some of the timbers broken in the first right entry and ordered new timbers put in at once. The pit boss informed me that he would have the timbermen commence the work immediately.

April 27, 1899.—I again inspected the White Ash mine. I found the workings of the mine in good condition. The only work being done on this date was the drawing of the slope pillars, and all pillars will be drawn inside of thirty days, when this mine will be closed down.

May 11, 1899.—On this date I made a final inspection of the White Ash mine. The pillars were all drawn, the mine worked out and abandoned.

LUCAS MINE.

[James Duggan, superintendent; John Hunt, pit boss.]

This mine is located 3 miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, anthracite; thickness of vein, 3 feet 9 inches; total output, fiscal year ended June 30, 1899. 45,000 tons; estimated value of output, $105,000; depth of slope, 1,800 feet; total value of improvements, $6,000; average number of men employed inside, 160; average number of men employed outside, 35; average number of boys employed inside, 5; average number of boys employed as slate pickers outside, 15; number of days mine was operated, 192; number of tons coal used at mine, 1,000 tons; where coal is marketed, New Mexico, Arizona, California, Colorado, and Kansas.

This mine is located on a branch of the Atchison, Topeka and Santa Fe Railroad, which connects with the main line of the road at Waldo Station. The mine has a capacity of 450 tons per day, and is ventilated by a double 6-foot Murphey fan.

RECORD OF INSPECTION.

September 2, 1898.—On this date I inspected the mine known as the Lucas mine, which is owned and operated by the Cerrillos Coal Railroad Company. I measured 11,000 cubic feet of air entering the mine per minute. I then inspected Nos. 3, 4, and 5 right entries and the rooms thereon. I found the workings which I inspected well ventilated and in good condition.

September 3, 1898.—I continued my inspection of the Lucas mine. I inspected Nos. 1 and 2 right entries and the rooms thereon and took air measurements. I found the workings well ventilated and in good condition.

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October 12, 1898.—I again inspected the Lucas mine. I measured 12,000 cubic feet of air entering the mine per minute and measured 12,250 cubic feet of air returning per minute. I found the miners in No. 4 right entry working too far in advance of the air, and ordered a crosscut driven at the face of the entry to connect with the back entry or air course, and ordered the last crosscut bratticed and made air-tight, so as to force the air up to the face of the workings. The work of driving the crosscut was commenced.

October 17, 1898.—I again visited the Lucas mine to ascertain if the crosscut had been driven as per my instructions of October 12. I found that my instructions had been complied with and I found the ventilation very much improved.

November 29, 1898.—I again visited the Lucas mine. I measured 17,760 cubic feet of air entering the mine per minute and measured 19,500 cubic feet of air returning per minute. I found the air distributed throughout the workings as follows:

	Cubic feet.
Last crosscut near the face of fourth right entry	3,520
Top of raised plane on the fourth right entry	6,400
Above the fourth right entry on slope	7,200
Dip plane on the second right entry	1,800

I found the mine well ventilated and found the workings of the mine well timbered and in good condition.

December 22, 1898.—I again inspected the Lucas mine. I measured 13,720 cubic feet of air entering the mine per minute. I then inspected all of the underground workings and found the mine well ventilated and in good condition.

January 27, 1899.—I again inspected the Lucas mine. I measured 17,000 cubic feet of air entering the mine per minute and measured 18,900 cubic feet of air returning per minute. I then inspected the fourth right entry and No. 1 dip plane, and found the workings well ventilated and in good condition.

January 28, 1899.—I continued my inspection of the Lucas mine. I inspected Nos. 2 and 3 right entries and No. 1 dip plane, which is driven between Nos. 2 and 4 right entries, and found the workings in good condition.

January 30, 1899.—I inspected the machinery belonging to the Lucas mine and found the machinery in first-class condition.

February 24, 1899.—I again inspected the Lucas mine. I measured 14,880 cubic feet of air entering the mine per minute and measured 15,750 cubic feet of air returning per minute. I found the workings of the mine in good condition,

February 28, 1899.—I inspected the machinery belonging to the Lucas mine and found the machinery in good condition.

March 17, 1899.—I again inspected the Lucas mine. I measured 14,400 cubic feet of air entering the mine per minute and measured 14,700 cubic feet of air returning per minute. I then inspected the main slope and No. 5 right entry. I measured 3,840 cubic feet of air traveling on the slope between Nos. 4 and 5 right entries. I found the workings well timbered and in good condition.

March 28, 1899.—I continued my inspection of the Lucas mine. I inspected No. 4 right entry and No. 1 dip plane on the fourth right entry, also No. 3 right entry. I found the workings which I inspected in good condition.

May 13, 1899.—I again inspected the Lucas mine. I measured 16,800 cubic feet of air entering the mine per minute and measured 18,000 cubic feet of air returning per minute. I also took air measurements in the slope and in the first dip plane on the fourth right entry, which were as follows:

	Cubic feet.
On slope between Nos. 3 and 4 right entries	8,640
On slope below the fourth right entry	4,800
First dip plane between Nos. 2 and 3 right rooms	1,190

The only work being done in the mine was development work, driving the slope, entries, and turning rooms. I found the mine well ventilated and found the workings in good condition.

May 15, 1899.—I inspected the machinery belonging to the Lucas mine and found the machinery in good condition.

June 10, 1899.—I again inspected the Lucas mine. I measured 5,040 cubic feet of air entering the mine per minute and measured 5,200 cubic feet of air returning per minute. I found the workings of the mine in good condition. On this date the mine was not being operated.

COOK AND WHITE MINE.

[James Duggan, superintendent; William Graham, pit boss.]

This mine is located about 3 miles south of the town of Los Cerrillos, Santa Fe County, N. Mex. Owned and operated by the Cerrillos Coal Railroad Company. Kind of coal, bituminous; thickness of vein, 3 feet 9 inches; total output, fiscal year

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ended June 30, 1899, 145,000 tons; estimated value of output, $230,000; depth of slope, 1,800 feet; value of improvements this year, $5,000; total, $10,000; average number of men employed inside, 250; average number of men employed outside, 25; average number of boys employed inside, 10; number of days mine was operated, 260; number of tons used at mine, 1,000; where coal is marketed, New Mexico, Arizona, California, Old Mexico, and Texas, and to Atchison, Topeka and Santa Fe Railroad.

This mine is situated on a branch line of the Atchison, Topeka and Santa Fe Railroad, which connects with the main line at Waldo Station. At the terminus of this branch line is situated the town of Madrid, which is the post-office address of the Cerrillos Coal Railroad Company, and is quite a beautiful and substantial town, with about 1,200 inhabitants. The company owns all the dwellings and business houses of the town of Madrid, and following the "Record of Inspection" will be found a more complete description of the property of the Cerrillos Coal Railroad Company

RECORD OF INSPECTION.

September 5, 1898.—On this date I commenced my inspection of the Cook and White mine. I inspected the following working places and took air measurements, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	39,200
Above the second right entry on slope	33,480
Face of third right back entry	5,270
Face of third right main entry	2,880
Return at bottom of slope on right side	13,350
Return at bottom of slope on left side	10,440
Face of third left main entry	3,200
Bottom of slope	25,740
Return on second right entry	18,900
Last crossent on second right entry	12,600
No. 1 left room on No. 2 raised plane	6,000
No. 3 left room on No. 2 raised plane	5,880
Top of No. 2 raised plane	1,920
No. 1 right room on No. 2 raised plane	8,120
No. 2 right room on No. 2 raised plane	4,800
No. 3 left room on No. 1 raised plane	6,300
No. 5 left room on No. 1 raised plane	4,200
Top of No. 1 raised plane on second left entry	1,200
No. 3 right room on No. 2 raised plane	3,000
No. 1 right room on No. 1 raised plane	3,510

September 6, 1898.—I continued my inspection of the Cook and White mine and found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
No. 2 room on No. 2 raised plane, second left entry	4,095
Between Nos. 6 and 7 left rooms, second left entry	3,360
Between Nos. 7 and 8 left rooms, second left entry	2,240
Top of No. 2 raised plane, second left entry	9,240
Between Nos 7 and 8 right rooms, second left entry	4,680
Between Nos. 1 and 2 right rooms, second left entry	5,800
Face of No. 1, right main entry	11,200
No. 1 left room on No. 3 raised plane, first right entry	7,680
Between Nos. 3 and 4 left rooms, first right entry	2,550
Intake to second raised plane on first right entry	7,050
Return at No. 3 fan	27,000
Return at No. 1 fan	18,000
Total number cubic feet of air returning	45,900

I found the mine well ventilated and found the workings which I inspected in good condition.

September 8, 1898.—On this date I inspected the machinery belonging to the Cook and White mine and found the machinery in good condition.

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October 13, 1898.—I again commenced my inspection of the Cook and White mine and took air measurements throughout the workings, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	39,000
Above second right entry on main slope	35,100
Last crosscut on third right entry	7,200
Right back slope on third right entry	13,500
Face of No. 3 left entry	9,800
Left back slope on No. 3 left entry	10,500
Face of No. 3 right entry	5,800
Bottom of slope	23,760
Face of No. 2 left entry	8,800
Intake to No. 1 raised plane on second left entry	10,000
No. 1 left room on No. 1 raised plane	6,000
No. 5 left room on No. 1 raised plane	2,560
No. 7 left room on No. 1 raised plane	3,750
Top of No. 1 raised plane	3,680
No. 7 right room on No. 1 raised plane	5,520
No. 4 right room on No. 1 raised plane	3,920

October 14, 1898.—I continued my inspection of the Cook and White mine and took air measurements, which were found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
No. 1 left room on No. 2 raised plane, second right entry	7,400
No. 4 left room on No. 2 raised plane, second right entry	4,800
No. 3 right room on No. 2 raised plane, second right entry	2,000
No. 1 right room on No. 2 raised plane, second right entry	2,400
Return at No. 1 fan	20,000
Top of No. 1 raised plane on second right entry	1,700
No. 5 left room on No. 1 raised plane, second right entry	3,400
No. 5 right room on No. 1 raised plane, second right entry	2,250
Face of No. 1 right entry	12,100
Return at No. 3 fan	27,500
No. 1 left room on No. 3 raised plane, first right entry	6,000
No. 5 left room on No. 3 raised plane, first right entry	1,750
No. 4 right room on No. 3 raised plane, first right entry	2,880
No. 1 right room on No. 3 raised plane, first right entry	3,150

I discovered a small amount of carbureted-hydrogen gas at the face of the third right entry, and ordered safety lamps used in that place. I found the workings of the mine in very good condition.

October 15, 1898.—I inspected the boilers, ropes, fans, hoisting engines, and all the machinery belonging to the Cook and White mine and found the machinery in good condition.

November 25, 1898.—On this date I inspected the machinery belonging to the Cook and White mine, and I found the machinery in good condition.

November 26, 1898.—I commenced my inspection of the Cook and White mine and took air measurements throughout the workings, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	39,200
First right entry in last crosscut	16,650
Intake to No. 3 raised plane on first right entry	7,260
No. 3 left room on No. 3 raised plane	4,500
No. 6 left room on No. 3 raised plane	2,520
No. 7 left room on No. 3 raised plane	3,000
Top of No. 3 raised plane	520
No. 6 right room on No. 3 raised plane	1,800
Last crosscut between Nos. 3 and 4 right rooms	1,920
No. 1 right room on No. 3 raised plane	3,100
Return between Nos. 2 and 3 raised plane, first right entry	16,200
Above second right entry on slope	34,560
Last crosscut at face of second right entry	8,360
Inside of No. 2 raised plane of second right entry	12,250
First left room on No. 2 raised plane	5,880

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	Cubic feet.
No. 4 left room on No. 2 raised plane	4,050
No. 6 left room on No. 2 raised plane	1,820
No. 4 right room on No. 2 raised plane	1,440
No. 1 right room on No. 2 raised plane	875
No. 2 right room on No. 2 raised plane	1,920
No. 5 left room on first raised plane	4,800
No. 7 left room on first raised plane	4,320
Top of No. 1 raised plane at face of workings	12,600
No. 7 right room on No. 1 raised plane	4,800
No. 2 right room on No. 1 raised plane	2,800
No. 1 right room on No. 1 raised plane	3,600

Noremher 28, 1898.—I continued my inspection of the Cook and White mine and took air measurements, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Bottom of slope	25,300
Face of No. 3 left entry	4,000
No. 3 left back entry at slant	8,000
Face of No. 3 left back entry	2,280
Face of No. 3 right main entry	10,800
Face of No. 3 right back entry	5,460
Air traveling in No. 3 right entry	10,200
Return on right of slope, from No. 3 right entry	17,480
Return on left of slope, from No. 3 left entry	7,650
No. 1 right room on No. 2 raised plane, second left entry	4,550
Last crosscut between Nos. 2 and 3 right rooms	3,840
Last crosscut between Nos. 5 and 6 right rooms	2,600
No. 7 right room at face of room	3,300
Last crosscut between Nos. 5 and 6 left rooms	4,550
No. 2 left room at face of room	1,440
Return at No. 3 fan	25,000
Return at No. 1 fan	16,000
Total number of cubic feet of air returning	41,000

I found the mine well ventilated and found the workings of the mine in good condition.

December 19, 1898.—I again commenced my inspection of the Cook and White mine. I measured 39,200 cubic feet of air entering the mine per minute. I then inspected Nos. 3 right and left entries and found considerable gas generating at the face of No. 3 left back entry, and ordered a crosscut driven at the face of the entry. I also took air measurements throughout the workings, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Last crosscut between Nos. 3 left (back and main) entries	7,040
Return on left of slope, from No. 3 left entry	7,200
Return on right of slope, from No. 3 right entry	16,170
Face of No. 3 right main entry	8,000
Between Nos. 1 and 2 entries on slope	35,600
Between Nos. 2 and 3 entries on slope	23,760

December 20, 1898.—I continued my inspection of the Cook and White mine and found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Second right entry inside of second raised plane	13,230
Last crosscut at face of No. 2 right entry	7,000
First left room on No. 2 raised plane, second right entry	3,050
First right room on No. 2 raised plane, second right entry	3,080
Top of No. 2 raised plane	7,000
Air course leading to first right entry	13,302
Face of No. 3 left back entry	2,100

I tested the face of No. 3 left back entry for gas, and found a very small amount of gas at the face of the entry.

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December 21, 1898.—I continued my inspection of the Cook and White mine and found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Air course leading to No. 3 raised plane on first right entry	8,400
Air traveling in first right main entry	9,880
Air traveling in first right back entry at face of entry	16,000
Crosscut between Nos. 3 and 4 left rooms, No. 3 plane, No. 1 entry	1,800
Crosscut between Nos. 5 and 6 right rooms, No. 3 plane, No. 1 entry	2,430
Return at No. 3 fan	29,500
Return at No. 1 fan	13,725

With the exception of No. 3, left back entry, I found the workings of the mine in good condition, and just as soon as the crosscut in the third left back entry is completed the mine will be in first-class condition.

December 22, 1898.—On this date I again visited the third left back entry in the Cook and White mine for the purpose of ascertaining if the crosscut was being driven at the face of the entry, as per my instructions of the 19th instant I found the miners at work driving the crosscut and they informed me that the crosscut would be completed on the evening of the 24th instant. On this visit I found no gas in the entry.

December 23, 1898.—On this date I inspected the hoisting engines, boilers, ropes, and fans belonging to the Cook and White mine and found them in good condition.

January 24, 1899.—I again commenced inspecting the Cook and White mine and took air measurements throughout the workings which I inspected. I found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	37,520
Face of third left main entry	2,640
Face of third left back entry	3,720
Last crosscut at face of Nos. 3 left entries	8,100
Return from third left entry to second left entry	7,140
Face of third right main entry	6,750
Return from third right entry to second right entry	18,800
First left room on first left dip plane, second left entry	1,920
Bottom of first left dip plane, second left entry	900
Fourth right room on first left dip plane, second left entry	1,080
First right room on first left dip plane, second left entry	2,520
Top of first left dip plane (intake), second left entry	7,200

I found the above workings well ventilated and in good condition.

January 25, 1899.—I continued my inspection of the Cook and White mine and found the air measurements to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Face of No. 2 back entry	2,700
Face of No. 2 main entry	4,800
Intake to No. 1 raised plane	5,500
No. 1 left room on No. 1 raised plane	3,080
No. 1 right room on No. 1 raised plane	2,400
Crosscut between Nos. 2 and 3 right rooms, No. 1 raised plane	1,440
Crosscut between Nos. 3 and 4 left rooms, No. 1 raised plane	1,920
Crosscut between Nos. 7 and 8 right rooms, No. 1 raised plane	1,920
Crosscut between Nos. 9 and 10 left rooms, No. 1 raised plane	2,400

I found the above working places well ventilated and in good condition.

January 26, 1899.—I continued my inspection of the Cook and White mine and took air measurements, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Face of first right back entry	7,560
Face of first right main entry	10,800
Intake to No. 3 raised plane	9,600
Crosscut between Nos. 1 and 2 left rooms, No. 3 raised plane	7,280
No. 8 left room, No. 3 raised plane	2,565

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	Cubic feet.
No. 8 right room, No. 3 raised plane	1,530
No. 1 right room, No. 3 raised plane	6,720
Air traveling on slope above second right entries	30,130
Air traveling on slope above third right entries	29,700
Return at No. 1 fan	18,800
Return at No. 3 fan	32,500

I found the workings of the mine well ventilated and in good condition.

January 30, 1899.—I inspected the machinery belonging to the Cook and White mine and found the machinery in first-class condition.

February 25, 1899.—I again inspected the Cook and White mine. I measured 43,800 cubic feet of air entering the mine per minute. I then inspected the rooms on the first raised plane of the second left entry and found considerable gas (fire damp) in No. 6 right room, also in Nos. 8 and 9 left rooms, and immediately ordered the miners to stop working in said rooms until a sufficient quantity of air was forced into said rooms to sweep the gas away from said working places and render them perfectly safe. The superintendent was with me in the mine and he ordered the men to stop work at once. He also informed me that he would not allow any more work done in said mentioned places until they were perfectly clear of gas and absolutely safe. I also ordered the superintendent to allow no person to enter the first raised plane with a naked light and to be certain that every man working on the plane was furnished with a locked safety lamp; also to allow no powder of any kind used on the plane. The superintendent informed me that my instructions would be carried out. I then inspected the first dip plane on the second left entry and found no gas, and found the workings of the dip plane in good condition. I then went down to the third left entries and inspected the same. I found that a very strong feeder of gas (fire damp) had been encountered at the face of the third left main entry and ordered the superintendent to allow no powder used in this entry and to allow the miners to use nothing but locked safety lamps in said entry or the workings thereon. I took an air measurement in the crosscut which was driven between the air course and the main entry at the face of the entry, and measured 2,790 cubic feet of air traveling in the crosscut. This amount of air had very little effect on the feeder of gas, and the superintendent informed me that he would stop all work on this entry until a much stronger current of air was traveling at the face of the entry and the entry clear of gas. I then inspected Nos. 3 right entries and found said entries and the workings thereon clear of gas and in good condition.

February 27, 1899.—I continued my inspection of the Cook and White mine. I inspected the second right entries and the workings thereon and found the workings on said entries in good condition. I then inspected the first right entries and the workings thereon. I found one of the stoppings between the front and back entries in bad condition on account of not being air-tight, thus allowing the air to escape through the stopping and return to the fan before traveling up to the face of the entries. I ordered the stopping closed up and made air-tight. The man who has charge of the ventilation on this entry commenced the work of closing up the stopping. I then took air measurements throughout the workings, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	43,800
Above second right entry on slope	34,560
Crosscut between Nos. 1 and 2 right rooms, first raised plane on No. 2 left entry	6,890
Crosscut between Nos. 4 and 5 right rooms, first raised plane on second left entry	3,660
Crosscut between Nos. 5 and 6 right rooms, first raised plane on second left entry	2,400
Last crosscut at face of No. 6 right room, first raised plane	1,820
Return to first right from first raised plane	6,800
Bottom of No. 1 dip plane on second left entry	1,980
Intake to No. 1 dip plane on second left entry	7,830
On slope 100 feet above the third right entry	25,650
Left return at bottom of slope	4,400
Face of No. 3 left entry in crosscut	2,790
Back entry or air course, on third left, south of slant	7,235
Return to second left entry from third left entry	7,350
Return on right side of slope	22,750
Return to second right entry from third right entry	13,950
Crosscut at face of third right entries	6,720
Last crosscut at face of third right entry	5,175

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	Cubic feet.
No. 2 right entry, inside of No. 3 raised plane	18,000
Intake to second raised plane on No. 3 right entry	4,680
Intake to No. 1 raised plane on No. 3 right entry	7,920
Intake to No. 3 raised plane on No. 1 right entry	4,380
No. 1 back entry inside of last slant	6,300
Air traveling in first right entry outside of No. 3 raised plane	13,800
Return at top of No. 2 raised plane on second left entry	12,250

I found the workings of the mine well ventilated and in good condition.

February 28, 1899.—On this date I inspected the machinery belonging to the Cook and White mine, and found the machinery in good condition.

March 23, 1899.—I commenced my inspection of the Cook and White mine. I measured 40,200 cubic feet of air entering the mine per minute. I then inspected the main hauling slope, Nos. 3 right and left entries, No. 2 left entry, and No. 1 raised plane on the second left entry. I found a small amount of gas (fire damp) in No. 6 right room on No. 1 raised plane on the second left entry, and ordered canvas brattice put up so as to force the air up to the face of the room and clear the room of gas.

March 24, 1899.—I continued my inspection of the Cook and White mine. I inspected Nos. 1 and 2 right entries and the workings thereon. I found a small amount of gas (fire damp) in No. 1 right room on No. 1 raised plane on the second right entry, and ordered canvas brattice put up, so as force the air to the face of the room and clear the room of any gas that might generate therein. On this date the air measurements throughout the workings were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	42,200
Above air splits near bottom of slope	29,700
Left return at bottom of slope	9,680
Crosscut at face of No. 3 left entry	9,840
Return from third left entry to second left entry	9,900
Right return at bottom of slope	17,850
Crosscut near face of third right entry	9,990
Return from third right entry to second right entry	12,600
Intake to No. 1 right room on No. 1 raised plane, second left entry	6,600
Crosscut between Nos. 3 and 4 right rooms on No. 1 raised plane	7,800
Crosscut between Nos. 4 and 5 right rooms on No. 1 raised plane	2,000
Crosscut between Nos. 5 and 6 right rooms on No. 1 raised plane	4,860
Return from No. 1 raised plane to No. 1 right entry	3,750
Intake to No. 3 raised plane	6,500
Face of No. 1 right entry	9,990
Inside of No. 2 raised plane on first right entry	16,450
Top of No. 2 raised plane on second right entry	6,730
Top of No. 1 raised plane on second right entry	3,400
Crosscut at face of No. 2 right entries	6,480
Air traveling in No. 2 right entry	11,610
Return at No. 1 fan	18,040
Return at No. 3 fan	29,500

I found the workings of the mine well ventilated, and as soon as the work of bratticing up the rooms is finished, as per my instructions of March 23 and 24, the mine will be in good condition.

March 25, 1899.—On this date I inspected the machinery belonging to the Cook and White mine, and found the machinery in good condition.

April 22, 1899.—On this date, at about 9 o'clock a. m., I was informed that an explosion had occurred in the Cook and White mine at Madrid, N. Mex. I immediately sent a telegram to the superintendent of the Cook and White Mine, as follows:

JAMES DUGGAN, *Madrid, N. Mex.:*

I will start for mine to-day.

JOHN W. FLEMING.

I immediately got ready and started from Raton, N. Mex., for Madrid, N. Mex., at 12 o'clock m. Arrived at Madrid at 9 o'clock p m, and on April 23 (Sunday) I entered the Cook and White mine and went down into the third left main entry and tried to get as far as the face of the entry, but on account of the condition of the entries I could not get to the face of the entries. After coming out of the mine, I wrote the following letter, to wit:

MADRID, N. MEX., *April 23, 1899.*

SIR: A gas explosion occurred here in the Cook and White mine on April 21, at 11.55 a. m., which resulted in the killing of 4 men and 1 boy. I arrived here from

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Raton, N. Mex., at 9 o'clock p. m., and have been down in the mine to-day, but on account of the timbers and stoppings being blown out of place I could not get to the face of the entries where the men were working at the time the explosion occurred. Men are now working clearing the entries, timbering and repairing the stoppings. The bodies of the men and boy have been recovered. Will report fully as soon as possible.

Very respectfully yours,

JOHN W. FLEMING,
United States Coal Mine Inspector.

COMMISSIONER OF THE GENERAL LAND OFFICE,
Washington, D. C.

April 24, 1899.—I again went down into the Cook and White mine and entered the third left main entry, but on account of falls of rock caused by the explosion I could not get to the face of the main and back entries. I then took air measurements on the slope and left side of the mine, also in No. 3 right entries, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on slope	38,400
Below second right entry on slope	29,280
On slope above air splits, near bottom of slope	29,120
Right return near bottom of slope	17,020
Left return near bottom of slope	10,260
Return from third left main entry to second left back entry	12,960
Between the slant and last crosscut, about 140 feet from the face of the third left main entry	5,600
Return from third right main entry to No. 2 right back entry	13,650
Last crosscut at face of third right entries	5,980
Air traveling outside of slant in third right main entry	13,250

April 25, 1899.—I inspected the second right entries of the Cook and White mine and the workings thereon. I found a fall of rock in the back entry and ordered it cleared up at once. The work was commenced immediately. The air measurements on this date were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Second right back entry, outside of No. 2 slant	10,560
No. 2 raised plane on second right entry (intake)	3,000
Outside of second raised plane on No. 2 main entry	2,700
Inside of second raised plane	13,200
Top of No. 2 raised plane on second right entry	5,440
Crosscut from No. 14 left room on No. 1 raised plane	7,020
Top of No. 1 raised plane, second right entry	4,800
Crosscut between Nos. 6 and 7 right rooms, No. 1 raised plane	875

On the evening of April 25 the crosshead of the engine which runs No. 1 fan broke, and work was suspended in the Cook and White mine until the engine was in running order. The engine was started April 27 at 11.45 p. m. No persons but the fire bosses were allowed in the mine until the morning of the 28th.

April 28, 1899.—At about 2 o'clock p. m. I was informed that the stoppings along the line of the third left entries, where the explosion occurred, had been repaired as far as the last crosscut. I then went down into the mine and went in as far as the last crosscut on the third left entries and found the main entry full of gas from the crosscut up to the face of the entry, and ordered the men to do no more work until all the men were out of the mine, which would be about 5 o'clock p. m. At 5 o'clock we commenced the work of bratticing the entry with canvas from the crosscut up to the face of the entry, so as to clear it of gas. At 6.30 p. m. the work was completed and I found one of the safety lamps which had been used by one of the men who had been killed in the entry. I also found that all props on which the brattice had been nailed before the explosion had occurred were still standing, but the brattice cloth had been blown down by the force of the explosion. After the work of bratticing had been completed, I tested the face of the entry with my safety lamp and could scarcely get a trace of gas. I also tested the third left back entry and could only get a trace of gas at the face of that entry. I then took air measurements which were as follows: Intake on main slope, 35,040 cubic feet of air traveling per minute; last crosscut near face of the third left entry, 6,480 cubic feet; face of third left back entry, 3,630 cubic feet; face of third left main entry, 4,950 cubic feet.

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April 29, 1899.—On this date I again visited the third left entries of the Cook and White mine and examined them thoroughly, and found another safety lamp. The lamps which I found were in good condition. On this date I again took air measurements, which were as follows:

In the last crosscut near the face of entries I measured 6,480 cubic feet of air traveling per minute; at face of the back entry, 3,630 cubic feet, and at face of main entry 5,850 cubic feet.

The full complement of men for work in the two entries is five, and so far no rooms have been turned. On this date I found small feeders of gas generating at the face of the entries. I also inspected the second left entries and the workings thereon. I found gas in the first dip plane, and upon examination I found the air course which supplies the plane with air very small, and ordered the air course made larger. The superintendent was with me and he immediately put men to work enlarging the air course, and informed me that no more work would be performed on the plane until the air course was enlarged and everything in good condition. I also found the return air course leading from the second left main entry to No. 1 fan in bad condition and ordered it cleared of all falls of rock; also ordered it timbered with good, substantial timbers. The superintendent informed me that the work would be commenced at once. He also informed me that a new air shaft, 9 by 9 feet, was being sunk from the surface to connect with the first left entry, near the face of the entry, and that no more work would be done on the left side of the slope until the air shaft was completed and a first-class fan erected thereon. The work of sinking this shaft was commenced on the 22d day of April. The distance from the surface to the above-mentioned entry is 60 feet, according to survey, and the shaft will soon be connected with the entry.

Under the head of "Fatal accident reports" will be found my report in full of the gas explosion in the Cook and White mine on April 21, 1899.

May 9, 1899.—I again inspected the Cook and White mine and took air measurements, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	41,760
On slope above No. 3 entries	26,000
Left return near bottom of slope	8,170
Right return near bottom of slope	22,000
Between last crosscut and hauling slant on No. 3 left main entry	6,300
Face of No. 3 left main entry	5,550
Bottom of No. 1 dip plane on second left entry	2,880

I found considerable water in the left return at bottom of slope and ordered it pumped out. The pump was started immediately.

May 10, 1899.—I continued my inspection of the Cook and White mine and took air measurements, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Last crosscut near the face of No. 3 right entries	5,250
Face of No. 3 right back entry	5,280
Intake to No. 1 raised plane	7,875
Return from No. 3 right entry to No. 2 right entry	12,900
Last crosscut at face of No. 2 right entry	4,600
Face of No. 2 right back entry	4,500
Intake to No. 3 raised plane on No. 2 right entry	7,200
Intake to No. 2 raised plane on second right entry	2,400
Intake to No. 1 raised plane on second right entry	6,000

I found the above workings well ventilated and in fair condition.

May 11, 1899.—I continued my inspection of the Cook and White mine. I found No. 1 raised plane on the second left entry, which is the main air course leading from the second left entry to the fan, in bad condition. I then had the back slope opened up from No. 2 left entry to No. 1 left entry, and ordered the pit boss to keep the back slope opened for an air course until a permanent air course was driven between Nos. 1 and 2 left entries. After the back slope had been opened I took air measurements, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main slope	42,240
Above No. 3 entries, on slope	32,200
Return from No. 3 left entry to No. 2 left entry	11,900

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May 12, 1899.—On this date I again visited No. 2 left entry and No. 1 right entries of the Cook and White Mine and took air measurements, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Bottom of No. 1 dip plane on second left entry	3,200
Back slope or air course between Nos. 1 and 2 left entries	6,150
Last crosscut at face of first right entries	5,670
Return at No. 3 fan	36,120

May 15, 1899.—I inspected the machinery belonging to the Cook and White mine and found the machinery in good condition.

June 6, 1899.—I again commenced my inspection of the Cook and White mine and took air measurements throughout the workings, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake on main hauling slope	31,680
On slope above No. 3 entries	30,000
Left return near bottom of slope	7,600
Right return near bottom of slope	17,700
Last crosscut in No. 3 left entries	8,800
Face of No. 3 left back entry	7,050
Face of No. 3 left main entry	4,875
Crosscut at face of No. 3 right entries	9,600
Intake to No. 1 raised plane on No. 3 right entry	6,080
Crosscut between Nos. 1 and 2 left rooms No. 1 raised plane	4,000
Crosscut between Nos. 3 and 4 left rooms No. 1 raised plane	2,400
Return from No. 3 right entry to No. 2 right entry	17,200

I found the workings which I inspected well timbered and in good condition, and, with the exception of the top of No. 1 raised plane, I found the workings well ventilated. I ordered more air forced to the top of the plane. The pit boss informed me that a crosscut was being driven from the third right main entry to connect with No. 1 left room on the plane; also, a door or heavy curtain would be placed across the entry and force all the air up through the workings of the plane.

June 7, 1899.—I continued my inspection of the Cook and White mine and took air measurements, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Intake to No. 1 raised plane on second right entry	7,920
Last crosscut at face of No. 2 right entries	3,480
Intake to No. 4 raised plane on No. 2 right entry	8,150
Intake to No. 2 raised plane on No. 2 right entry	5,400
Top of No. 2 raised plane	5,100
Top of No. 1 raised plane	8,085
Return at No. 3 fan	23,750

I found the workings which I inspected well ventilated and in fair condition.

June 8, 1899.—I continued my inspection of the Cook and White mine and took air measurements, which were as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Top of No. 1 raised plane on second left entry	1,800
Air traveling around the face of Nos. 1, 2, and 3 right rooms on No. 1 raised plane on second right entry	3,600
Crosscut between Nos. 11 and 12 left rooms on No. 1 raised plane	1,400
Intake to No. 3 raised plane on first right entry	12,000
Last crosscut at face of No. 1 right entries	6,450
Return at No. 1 fan	21,600

June 9, 1899.—I again visited the third right entries of the Cook and White mine and found the entries in good condition. I then inspected No. 1 raised plane on the third right entry and found the air course, which was being driven from the third right main entry to No. 1 left room on No. 1 raised plane, completed. I found the ventilation on the plane very much improved. I measured 7,425 cubic feet of air traveling in the air course which is now the intake to the plane, and on June 6 I found only 6,080 cubic feet of air entering the plane. I then took an air measurement up at the top of the plane and found 1,440 cubic feet of air traveling per minute. I found the workings which I inspected well ventilated and in good condition.

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June 12, 1899.—On this morning I was informed that roof of No. 1 raised plane on the second right entry in the Cook and White mine had caved where the pillars were being drawn. I immediately went down into the mine and found that the roof had caved back of Nos. 1, 2, and 3 right rooms. I tested the places for gas, but found none, and found the places perfectly safe and in good condition. I then took air measurements throughout the workings, which I found to be as follows:

Cubic feet of air traveling per minute.

	Cubic feet.
Air traveling around the face of Nos. 1, 2, and 3 right rooms, where the pillars are being drawn, on No. 1 raised plane	2,320
Intake on main slope	39,600
Above third right entries on slope	23,000
Left return at bottom of slope	7,000
Right return at bottom of slope	15,300
Last crosscut near face of third right entry	9,920
Crosscut from No. 3 right main entry to No. 1 left room on No. 1 raised plane	6,750
Top of No. 1 raised plane	1,440
Intake to No. 1 raised plane on second right entry	9,750
Top of No. 1 raised plane on second right entry	8,250

On this date I found the workings well ventilated and in good condition.

DESCRIPTION OF THE PROPERTY SITUATED AT MADRID, SANTA FE COUNTY, N. MEX., AND OWNED BY THE CERRILLOS COAL RAILROAD COMPANY.

At Madrid, Santa Fe County, N. Mex., is one of the most attractive and interesting coal-mining camps in the West. The coal fields offer much that is interesting to the geologist as well as to those interested in coal mining. Here, only a few hundred feet apart, are two mines; the one producing a first-class article of anthracite coal, rivaling the Pennsylvania anthracite; the other one is a bituminous coal, unsurpassed for domestic or steam purposes. More interesting, the bituminous vein lies directly under the anthracite, so that the whole field that has been worked out in the anthracite vein has also been worked out in the bituminous vein 150 feet beneath. More interesting yet, the northern end of the anthracite seam was bituminous coal. This has all been worked out and was known as the famous white-ash coal. The white-ash field comprised about 200 acres.

The mine now being worked in bituminous coal is known as the Cook and White; the one now being worked in anthracite coal is known as the Lucas, both mines being named after the men who first operated them. The coal measures in this field are very numerous, these two being the principal seams. The Cook and White runs in thickness from 3 feet 6 inches to 4 feet 6 inches. The seam dips to the east at an angle averaging 12 degrees. The coal outcrops in the side of the canyon and is worked from a main slope driven in the direction of the greatest dip. The field is then blocked out into 600-foot squares, by side entries or levels, and dip or raised planes, driven off from the entries. The entries are driven in such a direction as will keep them nearly level or approximately at right angles to the slope. The planes are driven sometimes to the raise and sometimes to the dip, but always in a direction parallel to the main slope. The entries or levels are always driven in pairs, to enable a thorough system of ventilation, the top entry or hauling road being separated from the back entry by a pillar of 30 feet of coal, which is known as the double-entry system. Connection is kept up between the back and top entries by a system of crosscuts, the last crosscut always being closed as soon as a new one is made. From the planes, rooms are turned to the right and to the left every 50 feet. These, like the entries, are driven in such a direction as to be level and for a distance of 300 feet and 20 feet wide, with a 30-foot pillar remaining between the rooms, which is taken out in retreating after the rooms have been driven up their full length or when the rooms from two adjacent planes have met. Each plane requires a parting, or side track, and a small engine. These engines are so constructed as to be easily moved from one location to another in the mine, as occasion may require. Compressed-air power is used in running these engines as well as the pumps in the mine. Each plane, at its best, yields about 200 tons per day and is worked out in from eight to ten months.

The coal collected on the entries at the different planes is hauled by mules to the main parting for that entry, at the main slope, where it is attached to the main cable and hoisted to the surface. The coal is then quickly dumped from the mine cars into the railroad cars, and is soon on its way to the consumer.

The coal is screened into three different grades, namely: The lump, used for domestic purposes; the nut, also used for domestic purposes, and the slack, used for steam

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purposes. Some of the coal is disposed of unscreened, or "as run of mine," and is used in this condition for heavy steaming purposes where the boiler capacity is limited, as in the case of railway locomotives.

The mine is ventilated by means of two exhaust fans, located one at either side of the mine. The main slope is the main intake for both fans.

The last plane in the first south entry has also been driven out to the surface, which furnishes an auxiliary intake for the air that circulates through the extreme south workings of the entry. The air current coming down the main slope splits, or goes both ways, at the bottom, returning on either side through the workings and up the parallel slopes, which are parallel to the main slopes and 50 feet from it. Each air current then travels its respective side of the mine, through all the workings, and out through by way of the fans. The mine is thus kept thoroughly ventilated through all its parts.

The outside plant consists of the main hoister, small battery of boilers, blacksmith shop, trestle, tipple, scales, etc., and three large air compressors. These, as well as the whole outside plant connected with the Lucas mine, are run by a battery of eight large boilers.

The Lucas seam is the middle one of three coal strata lying close together and which are the top of all the coal measures in this canyon. In some places the three seams are so close together as to be all workable at one time, but as a usual thing only the middle one is mined. This varies in thickness from 3 feet to 3 feet 6 inches, and dips the same as the Cook and White. The methods of working are similar to those of the Cook and White, and the method of ventilation is the same, except that there is one fan instead of two. This fan is located on the north side of the main slope. The air current traveling on the south side of the mine crosses the slope and thus reaches the fan through what is known as the overcast or air-tight wooden box built over the top of the slope and crossing it at right angles. This is at present practically a one-sided mine, as the entries to the north have all been extended to that portion of the vein in which the coal is of a bituminous nature, as has been spoken of above. The prospecting and the work that has been done in the White Ash mine indicates that as the Lucas slope is extended a large field of anthracite coal will be opened up on the north side.

The most interesting part of the outside plant at this mine is the breaker, which name is usually applied to the huge building containing the machinery for crushing and assorting the coal. This building is 250 feet long, 60 feet wide, and 110 feet high. The top of the breaker is on a level with the mouth of the mine. As the coal is hoisted from the mine in pit cars, it is run into the breaker and dumped. On its descent to the storage bins, the coal first passes between two large, rough, iron cylinders, revolving rapidly, and at such a distance apart that the coal is broken up so that the largest pieces weigh from 5 to 6 pounds. This size is known as "grate." The coal then passes through long, cylindrical screens, which are kept slowly revolving. The mesh of the screens vary from one-quarter inch to 4 inches. They are set with one end higher than the other, the coal entering the screen at the higher end, and as the screens revolve the pieces of coal work from the higher to the lower end of the screens, falling through the screen as soon as the part is reached where the mesh is large enough to permit. The different-sized pieces of coal fall into different troughs which lead on down to the storage bins.

There are 15 or 20 boys employed on the breaker as "slate pickers," whose duty is to pick all slate out of the coal as the coal passes through the breaker. They receive 10 cents per hour for their labor. The boys employed on the breaker are from 12 to 16 years of age. The coal is thus graded in the sizes known as "grate," "egg," "stove," "nut," and "pea." The storage bins which hold 75 tons each are filled with the above-mentioned grades of coal. From the storage bins the coal is easily loaded on the railroad cars and shipped to Colorado, Kansas, California, and Mexico.

Owing to the nature of the roof in the mines, a greater portion of the roof has to be supported by timbers where the coal has been taken out. It would doubtless surprise one not acquainted with the workings of a coal mine to see how many cars of timbers are used in the mine each month.

These mines a e well equipped for the rapid and safe handling of coal. Electric bell signals are used throughout the workings. Compressed air furnishes the power inside of the mines, and steam outside.

The classes of occupation here are numerous, there being work for the coal miner, timbermen, track layers, rope rider, driver, engineer, machinists, and blacksmith.

The camp is nicely situated, being 3 miles from Los Cerrillos, 15 miles from the gold and copper fields of Ortiz and San Pedro, 35 miles from the Cochiti mining district, and about 25 miles from the city of Santa Fe, which is the capital of the Territory.

The company owns and operates a large store where is kept in stock a large assortment of general merchandise, in fact everything that is needed for the wants of the miner. The miners all dress and live well, buying the best the market affords.

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The houses are all owned by the company and rented to the employees. The houses are well built and kept in good repair, and are well suited to the needs of the coal miner and his family. Several hundred shade trees have been set out in the town of Madrid within the last 3 years, which are all growing nicely.

The town supports a city hall, excellent school, and two churches. The greatest disadvantage to work against so far has been the water supply. So far all the water for the town has to be shipped in tanks by railway. The company is now sinking a well in the hope of striking an artesian flow of water, and the indications are that the town will soon have an abundant and unfailing supply of pure water.

OMARA MINE.

[W. P. Gould, lessee.]

This mine is located about 7 miles south of Ortiz Station, which is a station on the Atchison, Topeka and Santa Fe Railroad. Owned by Frederick Muller and is operated by W. P. Gould, lessee. Kind of coal, bituminous; thickness of vein, 4 feet; total output fiscal year ended June 30, 1899, 1,139 tons; estimated value of output, $1,894; depth of slope, 400 feet; average number of men employed, inside, 3; average number of men employed, outside, 4; number of days mine was operated, 225; where coal is marketed, sold to local trade.

This mine is ventilated by an air shaft and has a capacity of 20 tons per day. The coal is hauled in wagons to the railroad at Ortiz Station and shipped to the consumers.

On account of the few men working in this mine I did not visit the mine during the fiscal year. This mine is located in Santa Fe County, N. Mex.

SOCORRO COUNTY.

CARTHAGE MINE.

[Hilton & Luerra, operators.]

This mine is located about 12 miles in a southeasterly direction from San Antonio, Socorro County, N. Mex. Kind of coal, soft bituminous; total output fiscal year ended June 30, 1899, 2,400 tons. Estimated value of output, $5,000; thickness of vein, 4 feet 6 inches; depth of slope, 2,.00 feet; value of improvements this year, $600; average number of men employed inside and outside, 3; number of days mine was operated, 225; where coal is marketed, Socorro, Silver City, Magdalena, Belen, and Water Canyon, N. Mex.

The coal is hauled in wagons to San Antonio, N. Mex., and shipped to the different towns above mentioned along the Atchison, Topeka and Santa Fe Railroad. This mine has a capacity of about 50 tons per day, and is ventilated by an air shaft. Considerable development work has been done on this mine and the coal is of very good character, but the cost of hauling the coal 12 miles in wagons to railway station is too great an expense to enable the operators to compete successfully with other mines which are situated more conveniently to market.

RECORD OF INSPECTION.

November 9, 1898.—On this date I visited and inspected the Carthage mine. I measured 2,310 cubic feet of air entering the mine per minute and measured 2,450 cubic feet of air returning per minute. I found the workings well ventilated and the mine in good condition.

SAN JUAN COUNTY.

STEVENS MINE.

[Walter Stevens, general manager.]

This mine is situated near the town of Farmington, San Juan County, N. Mex. Owned and operated by Walter Stevens. Kind of coal, bituminous; thickness of vein, 15 feet; total output fiscal year ended June 30, 1899, 310 tons; estimated value of output, $310; value of improvements, $80; average number of men employed, 1; where coal is marketed, town of Farmington, N. Mex.; number days mine worked, 100.

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THOMAS MINE.

[W. H. Thomas, manager.]

This mine is situated near La Plata, San Juan County, N. Mex. Operated by W. H. Thomas. Kind of coal, bituminous; total output fiscal year ended June 30, 1899, 150 tons; estimated value of output, $150; thickness of vein, from 2 to 4 feet; number of men employed at mine, 2; number of days mine worked, 60; value of improvements, $600; where coal is marketed, town of La Plata and vicinity.

MORGAN MINE.

[George Morgan, manager.]

Located near the town of La Plata, San Juan County, N. Mex. Operated by George Morgan. Kind of coal, semianthracite and bituminous; thickness of veins, 1 vein 3 feet 10 inches and 1 vein 60 feet; total output fiscal year ended June 30, 1899, 250 tons; estimated value of output, $312; number of men employed in the mine, 2; number of days mine worked, 60; where coal is marketed, sold at mine to local trade.

BRUCE MINE.

[R. E. Bruce, manager.]

Located near the town of Fruitland, San Juan County, N. Mex., and operated by R. E. Bruce. Kind of coal, lignite; thickness of vein, 14 feet; total output fiscal year ended June 30, 1899, 100 tons; estimated value of output, $75; number of men employed at mine, 1; number of days mine worked during the year, 60; where coal is marketed, Jewett Valley and Farmington, N. Mex.

The four above-mentioned mines, which are situated in San Juan County, are about 50 miles from any railway. Owing to the great distance from railway and the few men employed, I deemed it unnecessary to visit and inspect the mines. The mines have not yet been developed to any extent, only a few tons being taken out to supply the local demand. From the reports sent in by the operators of the mines, there seem to be good veins of coal, but the distance from market prevents the mines being worked profitably.

Analysis of coal from the White Ash mine of the Cerrillos Coal Railroad Company.

[Made by W. D. Church, December 2, 1893.]

COAL FROM MADRID, N. MEX.

Water	per cent..	2.00
Volatile matter	do....	39.00
Fixed carbon	do....	53.76
Mineral ash	do....	5.24
Total		100.00
Coke	per cent..	59.00
Character of coke		Strong and tough.
Color of ash		Light-yellowish gray.
Character of ash		Soft and light.
Sulphur (as sulphide)	per cent..	0.010
Sulphur (as sulphate)	do....	.022
Phosphorus	do....	.006
Specific gravity		1.410
1 cubic foot weighs	pounds..	88.125
Analysis of mineral ash:		
Silica	per cent..	26.93
Alumina	do....	32.41
Oxide of iron	do....	3.96
Calcium oxide	do....	24.68
Magnesium oxide	do....	10.32
Calcium sulphate	do....	.21
Alkalies and loss	do....	1.49
Total		100.00

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COAL FROM RATON COAL AND COKE COMPANY.

Water	per cent..	0.75
Volatile matter	do....	34.40
Fixed carbon	do....	56.93
Mineral ash	do....	7.92
Total		100.00
Coke	per cent..	64.85
Character of coke		Very strong and tough.
Color of ash		Very light ocher.
Character of ash		Soft and light.
Sulphur (as sulphide)	per cent..	0.016
Sulphur (as sulphate)	do....	.022
Phosphorus	do....	.014
Specific gravity		1.291
1 cubic foot weighs	pounds..	88.690
Analysis of mineral ash:		
Silica	per cent..	44.16
Alumina	do....	39.28
Oxide of iron	do....	2.95
Calcium oxide	do....	7.41
Magnesium oxide	do....	3.27
Sulphate of calcium	do....	.41
Alkalies and loss	do....	2.52
Total		100.00

EMPLOYEES.

The following tabulated statement shows the number of miners, day men, and boys employed in and about the coal mines of the Territory of New Mexico during the fiscal year ended June 30, 1899:

Counties.	Miners.	Boys.	Day men.	Total.
Bernalillo	819	11	112	942
Colfax	139	15	100	254
Santa Fe	483	18	79	580
Rio Arriba	33	.....	12	45
Lincoln	24	.....	26	50
San Juan	6	.....	.....	6
Socorro	3	.....	.....	3
Total	1,507	44	329	1,880

In the column headed "Day men" are included all men employed in and about the mines in any capacity, except those actually engaged in mining. During the fiscal year ended June 30, 1898, there were employed in and about the mines of the Territory 1,485 miners, 30 boys, and 373 day men, making a total of 1,888 employees. During the fiscal year ended June 30, 1899, as shown by the above tabulated statement, there were employed in and about the mines of the Territory 1,507 miners, 44 boys, and 329 day men, making a total of 1,880 employees. A comparison of the two fiscal years shows an increase of 22 miners and an increase of 14 boys, but a decrease of 44 day men, making a total decrease of 8 in the total number of employees for the fiscal year ended June 30, 1899.

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Production of coal.

Name of mine.	Number of men employed.		Number of tons of coal mined.		Estimated value of product, 1898-99.
	1897-98.	1898-99.	1897-98.	1898-99.	
BERNALILLO COUNTY.					
Gallup	269	275	141.145	151,525	$212,000
Catalpa	68	105	4,356	58,061	81,280
Crown Point	156	123	61,194	45,490	63,700
Sunshine	125	125	48,450	27,723	39,000
Otero	177	172	90,366	96,473	144,709
Thatcher	0	33	0	11,311	16,967
W. A. Clark	80	90	3,500	46,986	73,158
Rocky Cliff	35	10	32,000	5,000	7,500
Stewart	0	9	0	2,000	3,000
Total	927	942	372,611	444,569	641,314
COLFAX COUNTY.					
Blossburg Nos. 4 and 6	360	240	210,000	308,316	462,474
Smith No. 2	8	6	2,972	3,631	7,262
Mesa	5	5	1,000	1,100	2,200
Latamore	0	3	0	600	1,200
Total	373	245	213,972	313,647	473,136
SANTA FE COUNTY.					
Cook and White	285	285	115,000	145,000	230,000
Lucas	142	200	25,000	45,000	105,000
White Ash	127	88	108,000	56,000	89,600
Omara	0	7	0	1,139	1,894
Total	554	580	248,000	247,139	426,494
RIO ARRIBA COUNTY.					
Monero Nos. 1 and 2	45	45	22,500	39,000	51,100
SOCORRO COUNTY.					
Carthage	4	3	1,500	2,400	5,000
LINCOLN COUNTY.					
Old Abe	0	4	0	1,469	2,672
Akers	0	17	0	0	0
Ayers	0	29	0	0	0
Total	0	50	0	1,469	2,672
SAN JUAN COUNTY.					
Bruce	0	1	0	100	100
Thomas	0	2	0	150	150
Stevens	0	1	0	310	310
Morgan	0	2	0	250	312
Total	0	6	0	810	872

Counties.	Output for fiscal year ended June 30, 1899.	Estimated value.	Percentage of output for Territory.
	Tons.		
Bernalillo	444,569	$641,314	42.378
Colfax	313,647	473,136	29.899
Santa Fe	247,139	426,494	23.558
Rio Arriba	39,000	51,100	3.717
Socorro	2,400	5,000	.229
Lincoln	1,469	2,672	.141
San Juan	810	872	.078
Total	1,049,034	1,600,588	100.000

The production for the fiscal year ended June 30, 1899, was 1,049,034 tons, which was an increase of 190,451 tons over the total production of the previous fiscal year.

The total estimated value of the production for the fiscal year ended June 30, 1899, was $1,600,588.

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For the fiscal year ended June 30, 1899, there were reported 25 mines in operation, being 5 more than during the fiscal year previous.

From the column of percentages of production it will be seen that the output of coal from the Territory comes practically from 4 counties.

During the fiscal year there were reported to me, as mine inspector, 15 fatal accidents, the causes of which were as follows: By pit cars, 3; by electric wires, 1; by fall of slate, 2; by smothering, 1; by gas explosion, 5; by fall of rock, 3.

The following table shows the number of tons of coal mined for each life lost:

County.	Tons mined.	Lives lost.	Tons of coal mined for each life lost.
Bernalillo	444,569	1	444,569
Colfax	313,647	5	62,729⅖
Santa Fe	247,139	9	27,459⅑

During the fiscal year there were reported to me, as mine inspector, 16 nonfatal accidents, the causes of which were as follows: By fall of slate, 2; by pit cars, 3; by falling, 1; by fall of rock, 5; by fall of coal, 4; by railway cars, 1.

The following table shows the number of tons of coal mined for each nonfatal accident:

County.	Tons mined.	Accidents.	Tons of coal mined for each nonfatal accident.
Bernalillo	444,569	9	49,396⅑
Colfax	313,647	3	104,549
Santa Fe	247,139	4	61,784¾

ACCIDENTS.

Table of accidents of a fatal character reported to me, as mine inspector, for the fiscal year ended June 30, 1899, showing where accident occurred, date, name of person killed, and the cause of death.

Name of mine.	Date.	Name.	Character of injury.	Cause of death.
Blossburg mine, Blossburg, N. Mex.	Mar. 1, 1899	Juan M. Rivera	Body crushed and neck broken.	Fall of rock.
	do	William Lipscomb	Head badly mashed	Do.
	May 16, 1899	Thomas Hermann	Burned	Electricity.
	May 9, 1899	Robert Walker	Neck broken	Fall of slate.
	June 8, 1899	Hugo Shultz	Broken blood vessel.	Fall of rock.
Gallup mine, Gallup, N. Mex.	Dec. 6, 1898	Franz Cadiz	Lacerated leg	Pit cars.
Cook and White, Madrid, N. Mex.	July 26, 1898	Jose Tenario	Fracture of spinal column.	Fall of slate.
	Dec. 14, 1898	Robert Johnson	Body mashed	Pit cars.
	June 29, 1899	Thomas Foster, jr.	Neck broken	Do.
	Apr. 21, 1899	Fred Aira	Concussion and after-damp.	Gas explosion.
	do	John Piva	do	Do.
	do	John Sienowesky	do	Do.
	do	Adam Jerosewiez	do	Do.
	do	Francis E. Watts	do	Do.
Lucas mine, Madrid, N. Mex.	Oct. 6, 1898	Tranquilino Martinez.	Fell into coal chute	Smothering.

RECORD OF FATAL ACCIDENTS.

BLOSSBURG MINE.

March 1, 1899.—Juan M. Rivera, about 27 years of age, a miner, nativity, Mexican, was killed in the Blossburg mine, in room No. 2, on the fourteenth right entry. Cause, fall of rock. Also William Lipscomb, age about 40 years, a negro miner, who was working with Juan M. Rivera, was killed by a fall of rock. I made a personal

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inspection of the room in which the two men had been killed. I found that they had been engaged in drawing pillars, and had timbered the south side of the room, but had neglected to timber along the north side, where they were drawing the pillars, leaving a space 40 by 15 feet wide without timbers. I made inquiries of the mine boss to know the reason why the deceased men had not used timbers to secure their working places from all danger. The mine boss, and also the fire boss, informed me that they had repeatedly warned and cautioned both deceased men about timbering their working place, and had ordered them to do so, which they promised to do, but they appeared to be anxious to load more coal before they did any timbering, and the roof, which is composed of rock and bone coal, fell upon them, killing them instantly. Both deceased men were unmarried.

Copy of coroner's report.

TERRITORY OF NEW MEXICO, *County of Colfax, ss:*

We, the undersigned justice of the peace and jury, who sat upon the inquest held this 2d day of March, 1899, on the bodies of William Lipscomb and Juan M. Rivera, found in precinct No. 16 of the county of Colfax, find the deceased came to their deaths by an avoidable accident caused by their own neglect.

CHARLES F. PETERSON,
Justice of the Peace.

THOS. THOMPSON,
MAX FRENCH,
AMBROSE COX,
JOHN HADDOW,
GEORGE WILLIS,
PATRICK MCGARVEY,
Jurors.

May 9, 1899.—Robert Walker, negro, a coal miner, about 40 years of age, was killed in room No. 23, entry No. 20 (left), by a fall of slate. I visited the place where the accident had occurred and found that no work had been done in the room after the fatal accident had occurred. I found the room well timbered and in good condition, but a small piece of draw slate which was close up at the face of the coal fell on the deceased while he was working, killing him instantly.

Copy of coroner's report.

TERRITORY OF NEW MEXICO, *County of Colfax, ss:*

We, the undersigned justice of the peace and jury, who sat upon the inquest held this 10th day of May, 1899, on the body of Robert Walker, found in precinct No. 16 of the county of Colfax, find that the deceased came to his death by reason of an unavoidable accident in the coal mines at Gardiner, N. Mex.

CHARLES F. PETERSON,
Justice of the Peace.

J. C. GOOCH,
J. J. ENIS,
HARRY RUFNER,
CHARLES BARNETT,
J. F. WEBB,
SHELTON TREADWAY,
Jurors.

May 16, 1899.—Thomas Hermann, an Austrian, miner, about 35 years of age, was killed on entry No. 20. I investigated the cause and found that the deceased was on entry No. 20 and a mule was coming down the entry with a loaded car. The driver told Mr. Hermann to stand aside and let the mule pass. He (Hermann) struck the mule with a stick of timber and scared it. The mule ran against him, throwing him against the electric wire, and in falling he pulled the positive and negative wires together, the two wires touching each other caused a heavy flash, which burned him, causing death almost instantly.

Copy of coroner's report.

TERRITORY OF NEW MEXICO, *County of Colfax, ss:*

We, the undersigned justice of the peace and jury, who sat upon the inquest held this 17th day of May, 1899, on the body of Thomas Hermann, found in precinct No.

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16 of the county of Colfax, in the Territory of New Mexico, find that the deceased came to his death by reason of his carelessness in the Blossburg mine, in the town of Gardiner, N. Mex., by being killed by electric wires.

C. F. PETERSON,
Justice of the Peace.
C. P. JOHNSTON,
H. L. TAPLIN,
J. JENKINS,
LEE BOGARDUS,
THOMAS GREGORY,
JOSEPH JACKSON,
Jurors.

June 8, 1899.—Hugo Shultz, a German, miner and timberman, about 55 years of age, was injured in the Blossburg mine. He was timbering on the main entry and neglected to pull down some loose rock, and the accident occurred while moving a prop to reset same. When he removed the prop, the slate fell on him and broke a blood vessel. He was carried home and died about 9 o'clock p. m. from internal hemorrhage. No coroner's jury.

GALLUP MINE.

December 6, 1898.—Franz Cadiz, an Austrian, miner, 40 years of age, was injured in the Gallup mine, on No. 15 left entry, room No. 7. He and his partner were dropping a car of coal down the plane. The deceased was in front and his partner behind the car. The car stuck, and deceased asked his partner to loosen the sprags, which his partner did, but neglected to put them back in. He was then unable to hold back the car, and, being in front of it, was run against another car that was in front of him, lacerating his leg. The deceased was taken to the hospital and died on December 10 from the effects of his injuries. No coroner's jury.

LUCAS MINE.

October 6, 1898.—Tranquilino Martinez, a Mexican, slate picker, aged 12 years, was injured in the breaker of the Lucas mine. The deceased fell into the pea-coal chute, where he was smothered, breathing only once after being taken out. No coroner's jury.

COOK AND WHITE MINE.

July 26, 1898.—Jose Tenario, a Mexican, miner, 35 years of age, was injured in the Cook and White mine by a fall of slate. He was working in No. 2 raised plane on second left entry, room No. 5, when a fall of rock occurred in the room, fracturing and dislocating the spinal column of the deceased, from the effects of which he died at about 8 o'clock a. m. Deceased left wife and two children. No coroner's jury.

December 14, 1898.—Robert Johnson, an American, trapper, aged 14 years, was injured in the Cook and White by falling under a pit car and having his body mashed, killing him instantly. No coroner's jury.

June 29, 1899.—Thomas Foster, jr., English, driver, aged 21 years, was injured in the Cook and White mine. He was employed as driver and fell off his loaded trip, the cars running over him and killing him instantly. No coroner's jury.

April 21, 1899.—On this date, at about 11.50 o'clock a. m., a gas explosion occurred in the Cook and White mine, causing the death of Fred Aira, an Italian, miner, 32 years of age; also, the death of John Piva, an Italian, miner, aged 39 years; also, the death of John Sienowesky, a Polander, miner, 35 years of age; also, the death of Adam Jerosewiez, a Polander, miner, aged 35 years; and also the death of Francis E. Watts, an American, driver, aged 16 years.

REPORT OF GAS EXPLOSION.

April 21, 1899.—On this date a fatal gas explosion occurred in the Cook and White mine. At the time the explosion occurred I was inspecting the mines which are located in Colfax County, and did not receive the news of the explosion until 9 o'clock a. m., the following morning, April 22. I started on the first train, at 12 m., for Madrid, N. Mex., arriving there at 9 o'clock p. m. on the same day. Upon my arrival at the mine I asked the superintendent of the mine, James Duggan, where the explosion had occurred. He informed me that the explosion had occurred in or at the face of the third left entries; he also told me that on account of the setbolt, which fastens the eccentric rod to the valve stand of the engine, becoming loose, caused the engine which drives the fan to stop. He also told me that the bodies

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were all recovered in about three hours after the explosion had occurred; he also stated that two naked lamps were found by the side of the two bodies which had been found in the third left back entry. I then asked him if he could go down into the mine and make an examination of the entries at once. He informed me that there was no work being done in the mine that night, but that men would be working in the entries the following day (Sunday), repairing the stoppings which were blown out by the explosion; also timbering and cleaning up the entries.

On Sunday, April 23, I entered the mine and went down into the third left main entry and tried to get as far as the face of the entries, but, on account of the condition of the entries, I could not get to the face. I found that a number of sets of timbers and all the stoppings along the line of the entries had been blown out by the force of the explosion. I also found four of the stoppings on the slope above the entrance to the third left main entry had been badly shattered, and found that the force of the explosion had traversed across the slope and into the third right entry, breaking down a door which is about 150 feet from the entrance of the third right entry on the slope. I then ordered the pit boss to keep the men at work day and night until the work of timbering, clearing the entries, and repairing the stoppings were completed.

On the 24th of April I again visited the third left entry, but could not get to the face of the workings.

On April 28 I was informed that the stoppings had been repaired up as far as the last crosscut in the entries. I then went down into the mine and went in as far as the last crosscut on the third left main entry, and found the main entry full of gas from the crosscut up to the face of the workings, and ordered the men to do no more work until all the men were out of the mine. At 5 o'clock p. m., when all the men were out of the mine, we commenced the work of bratticing the entry with canvas from the crosscut up to the face of the entry, so as to force the air up to the face and clear it of gas. At 6.30 p. m. the work was completed and I found one of the safety lamps which had been used by one of the men who had been killed, near the face of the entry. I also found that all the props on which the brattice had been nailed before the explosion had occurred were standing, but the brattice had been blown down. After the work of bratticing had been completed, I tested the face of the entry for gas with my safety lamp, and although feeders of gas were generating from the face of the coal, I could scarcely find a trace of gas with my lamp. I also visited the back entry, which is the main air course, and could only get a trace of gas at the face of this entry. On the following day, April 29, I again visited the entries and examined them thoroughly, and found another safety lamp in the third left main entry. The lamps which I found were in good condition. On this date I took air measurements and in the last crosscut found 6,480 cubic feet of air traveling per minute; at face of back entry, 3,630 cubic feet; and at face of main entry, 5,850 cubic feet. The main entry is driven 65 feet beyond the crosscut, and the back entry is driven 68 feet, and the entries are driven about 1,060 feet in length from the slope, which is the main intake or air course for the entries.

I called on Samuel Bailey who was employed as driver in the third right entry at the time of the explosion, and he stated that, at about 11.30 a. m., on April 21, Francis E. Watts, who was then employed as driver in the third left entry, came over into the third right entry and told him (Bailey) that the men in the third left entry were using naked lights, while he (Watts) was compelled to use a safety lamp; and that when any of the bosses came around where the miners were working, the miners in the third left entry would blow out their naked lights and cover the lamps with dirt.

Frank Sherbly, who was working on the night shift in the third left back entry, says that when he finished work on the morning of the 21st, there was no gas in the entry and that the ventilation was splendid.

Eli Perritt, who was working in the back entry with Frank Sherbly, says that he (Perritt) finished work in the entry about 5 a. m. on the morning of the 21st, and when he left the entry in the morning there was no gas at the face of the entry; he further says that the entry was bratticed up to within 8 feet of the face of the workings and everything was in good condition.

George Pugh, who was employed as fire boss in the Cook and White mine, says that he was in the third left entries on April 20, at 1.55 a. m., and found just a very little gas at the face of the back and main entries, but says that there was not enough gas to burn a person if ignited; he further says that the ventilation was splendid and that both entries were bratticed up to within 8 feet of the workings.

Joseph Haske, who was employed as fire boss in the Cook and White mine, says that he was in the third left entries on the morning of the 21st at about 3.30 a. m. and found a very small amount of gas at the face of the entries, and that the air was good and the entries were in good condition.

Henry Aira and Dominick Aira, who are brothers of Fred Aira, deceased, worked in the third left main entry on the night shift, and they say that when they finished their shift at 5.20 a. m on the morning of the 21st there was no gas of any consequence in the entry. I then asked them how their shots were lighted, and they told

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me that their shots were lighted by opening their safety lamps and using the naked light. This was strictly against the rules.

J. G. Campbell, who was employed in the Cook and White mine as fire boss, says that on the 14th day of April, while he was making his rounds through the mines, he caught Fred Aira, who was killed by the explosion, using a naked light in the third left main entry, and ordered him (Aira) not to use a naked light any more in that place, as it was strictly against the rules; he further stated that the entries were in good condition and the ventilation was splendid.

William H. Graham, who was employed by the Cerrillos Coal Railroad Company as foreman of the Cook and White mine, says that about 9.30 a. m. on April 21, he was in at the face of the third left entries and found no gas, and found the ventilation good and the entries in splendid condition.

James Duggan, who was employed as superintendent of the Cerrillos Coal Railroad Company, says that about 11.50 a. m. on April 21, a man came running to him and told him that No. 1 fan was stopped, and that he (Duggan) immediately ran as fast as he could to the fan house and as he was passing the main slope, which is the intake of the mine, told the rope rider and his assistant to place canvas over the mouth of the slope, and as soon as he (Duggan) reached the fan house he immediately saw what had caused the fan to stop. He states the cause as follows:

The setbolt that fastens the eccentric rod to the valve stem of the engine became loose, causing the engine to stop, and as the fan is run by a belt from the engine the fan also stopped; the superintendent also states that he got the fan and engine to running almost immediately after arriving at the fan house; that just as he got the fan started the explosion occurred. I called the engineer who was running the engine and looking after the fan and asked him how long the fan was stopped, and he told me that it could not have been more than six or seven minutes. The superintendent, James Duggan, stated that he immediately went down into the mine and organized a rescuing party, and found that the explosion had occurred in the third left entries. That by using canvas brattice on the stoppings they soon got into the entries and found the bodies of the four men and boy who had been killed by the explosion, namely, Fred Aira, John Piva, John Sienowesky, Adam Jerosewiez, and Francis E. Watts, and further stated that naked lamps were found by the bodies of Adam Jerosewiez and John Sienowesky, which were found in the third left back entry and out at the last slant on the entry, which is 114 feet from the face of the entry.

William H. Graham, foreman, also stated that the lamps were found beside the bodies of the above-mentioned men. I asked Mr. Graham who found the lamps, and he told me that he found one and Mr. Duggan found the other; he further stated that the two safety lamps, which the miners used in this entry, were found near the face of the entry.

No. 1 fan is a double 6-foot Murphey fan and ventilates the workings of the mine on the left side of the slope, the air being split at the bottom of the slope. No. 3 fan ventilates the workings of the right side of the mine on the right of the slope.

On my last inspection of the mine previous to the explosion, on March 23, I took an air measurement in the last crosscut which is driven at the face of the third left entries, and I measured 9,680 cubic feet of air traveling per minute through the crosscut, but no work was being done in the entry at this time.

The result of my investigation of the cause of the explosion was the conclusion in my mind that on account of No. 1 fan stopping and the canvas being put over the mouth of the slope the intake was then through the air course from No. 1 fan down through the workings of the mine, on the left of the slope, and in through the third left main entry through the crosscut and out by way of the third left back entry, across the slope and into the third right back entry or air course at the bottom of the right side of the slope, and out through by way of No. 3 fan on the right side. That as No. 1 fan was stopped and the air circulating from No. 1 fan around, as stated above, any gas that was generating throughout the workings on the left side of the mine would naturally be carried around with the air down to the third left entries, and as some gas was generating at the face of the third left entries, considerable gas may have accumulated at the face of the entries during the time No. 1 fan was stopped and before the canvas was placed over the mouth of the slope, and when the air returned down through the face of the workings and into the face of the third left entries, it would carry the gas which accumulated with it out through the third left back entry; and, as the naked lights were discovered at the side of the bodies found in this entry, it is my opinion that the gas was ignited by the naked lights at the point where the bodies were found in the third left back entry, and that the force of the explosion traversed back through by way of the third left main entry, as all the stoppings were blown out into the third left back entry. The men had strict instructions to use only safety lamps, and I am led to believe, from the information received, that they were using naked lights.

In conclusion, I would say that had the men been using safety lamps I feel satisfied that no explosion would have occurred.

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Copy of report of coroner's jury.

TERRITORY OF NEW MEXICO, *Santa Fe County, ss:*

We, the undersigned justice of the peace and jury, who sat upon the inquest held this 22d day of April, 1899, on the bodies of Adam Jerosewiez, John Sienowskey, John Piva, Fred Aira, and F. E. Watts, found in precinct 19 of the county of Santa Fe, find that the deceased came to their deaths by reason of concussion and after-damp in the third left entries of the Cook and White mine, in the town of Madrid, Santa Fe County, New Mexico, on the 21st day of April, 1899.

GUS J. JOHNSON,
Justice of the Peace.

JAMES MCGLANGHLI,
J. S. CAMPBELL,
FELIX MURPHY,
PAT BRADLEY,
FRANK SHERBLY,
FRANK FRANKEN,
Jurors.

Table of nonfatal accidents.

Name of mine.	Date.	Name.	Character of injury.	Cause.
Otero mine, Gallup, N. Mex..	Dec. 2, 1898	Mike Sackach	Fracture of femur.	Fall of rock.
	Dec. 3, 1898	Peter Giacomino..	Fractures of femur and patella.	Do.
	Nov. 28, 1898	Antonio Sanchez .	Fingers lacerated.	Railway cars.
Gallup mine, Gallup, N. Mex..	May 12, 1899	James Love.....	Leg lacerated.....	Fall of coal.
	June 2, 1899	John Sheridan....	Knee cap fractured.	Falling.
	June 6, 1899	Joe Cortez.....	Compound fracture of leg.	Fall of coal.
Crown Point mine, Gallup, N. Mex.	Aug. 4, 1898	Francis Wenette..	Dislocation vertebra.	Fall of rock.
	June 6, 1899	Anton Kivlaic....	Lacerated foot....	Fall of coal.
Catalpa mine, Gallup, N. Mex.	June 7, 1899	Chas. Breen.....	Mashed leg.....	Pit cars.
Blossburg mine, Gardiner, N. Mex.	Mar. 2, 1899	Jno. M. Knight ...	Broken rib.....	Fall of slate.
	June 13, 1899	William Lark.....	Broken leg.....	Pit cars.
	June 23, 1899	John Pattie.....	.....do.....	Fall of slate.
Lucas mine, Madrid, N. Mex..	Nov. 17, 1898	James Dule.....	Partial dislocation of vertebra.	Fall of rock.
	Jan. 1, 1899	Harry Childs	Ribs fractured....	Do.
Cook and White, Madrid, N. Mex.	Sept. 1, 1898	Peter Stoskee.....	Cut in groin	Pit cars.
White Ash mine, Madrid, N. Mex.	Oct. 6, 1898	Antonio Vella	Fractured leg.....	Fall of coal.

RECORD OF NON-FATAL ACCIDENTS.

OTERO MINE.

December 2, 1898.—Mike Sackach, a Slav, miner, age 22 years, was injured by a fall of rock on the Holmes entry of the Otero mine. He was sitting on end gate of car going up the entry when a piece of rock weighing about 100 pounds fell from the roof, striking him between the hip and knee, causing a fracture.

December 3, 1898.—Peter Giacomino, an Italian, miner, age 29 years, was injured in the Otero mine by a fall of coal at the face of his room.

November 28, 1898.—Antonio Sanchez, a Mexican, car man, age 24 years, was injured on railroad track below tipple. He was coupling two cars and got caught between the bumpers, having his fingers lacerated.

GALLUP MINE.

May 12, 1899.—James Love, an American, miner, age 29 years, received an injury in No. 11, left entry, room No. 9. The coal fell upon his foot while he was taking down coal, causing contused lacerated wound on right leg.

June 2, 1899.—John Sheridan, an American, driver, age 22 years, was injured in the Gallup mine. He was running to sprag his trips of loaded cars. He stumbled and fell on his knee with such force that he broke his knee cap.

June 6, 1899.—Joe Cortez, an Italian, miner, age 32 years, was injured in the Gallup mine on No. 11, left entry, room No. 6. He was in the act of undermining the coal, when a piece of coal fell on his leg, causing a compound fracture.

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CROWN POINT MINE.

August 4, 1898.—Francis Wenette, an Italian, miner, age 43 years, was injured on entry No. 2, room No. 33. This man was knocking out a prop which had been formerly set, believing that it was of no use. When he had knocked out the prop, a lot of loose rock, which was overhanging, fell upon him, causing dislocation of vertebra.

June 6, 1899.—Anton Kivlaic, a Slav, miner, age 19 years, was injured in entry No. 8, room No. 9. While he was in the act of undermining coal, the coal fell on his foot, causing contused lacerated wound of left foot.

CATALPA MINE.

June 7, 1899.—Charles Breen, a Slav, miner, age 24 years, received an injury in entry No. 1. This man was returning from his work after the noon hour and met a loaded trip of cars. He stepped in front of the trip of cars. The cars knocked him down and mashed his leg.

BLOSSBURG MINE.

March 2, 1899.—John M. Knight, an American, miner, age 48 years, was injured on entry No. 7. He was stooping down and a piece of top slate weighing about 20 pounds fell on him, striking him on the small of the back and fracturing one of the smaller ribs on the right side.

June 13, 1899.—William Lark, an American, helper on motor trips, age 24 years, was injured by pit cars. He was employed on the hauling trip as brakeman and was riding on the bumpers between the cars, when one car jumped the track, and in colliding his left leg was caught between the cars and broken just above the knee.

June 23, 1899.—John Pattie, a negro, miner, age 24 years, was injured in the fifteenth left entry, room No. 19. A piece of slate fell on him from near face of room and broke his right leg above and below the knee.

LUCAS MINE.

November 17, 1898.—James Dule, an Italian, miner, age 45 years, was injured in No. 3 right entry by a fall of rock, causing a partial dislocation of first and second lumbar vertebra.

January 1, 1899.—Harry Childs, Englishman, miner, age 32 years, was injured by a fall of rock at bottom of slope. He received a severe strain of back, fracturing ribs—eleventh and twelfth—on right side close to spinal column.

COOK AND WHITE MINE.

September 1, 1898.—Peter Stoskee, an Italian, miner, age 27 years, was injured on entry No. 2, in room No. 2, first raised plane. He was riding out on trip and fell off, receiving a cut in right groin about 8 inches long.

WHITE ASH MINE.

October 6, 1898.—Anton Velia, an Italian, miner, age 40 years, was injured in the new south entry by a fall of coal fracturing his right leg.

Table showing name of mine, method of working, ventilation, power, etc.

Name of mine.	Method of working.	Ventilation.	Power.
Crown Point	Double compartment shaft	Fan	Steam.
Gallup	Slope, double entry, room and pillar	do	Do.
Otero	Drift, single entry, room and pillar	Furnace	Do.
Rocky Cliff	do	do	Horse.
Sunshine	Slope, double entry, room and pillar	Fan	Steam.
Blossburg	Drift, double entry, room and pillar	do	Electricity
Mesa	Drift, single entry, room and pillar	Air shaft	Horse.
Smith No. 2	do	Furnace	Do.
Monero Nos. 1 and 2	Slope, single entry, room and pillar	do	Steam.
Carthage	do	Air shaft	Horse.
Cook & White	Slope, double entry, room and pillar	Two fans	Steam.
Lucas	do	Fan	Do.
White Ash	do	do	Do.
Catalpa	do	Furnace	Do.
W. A. Clark	do	Air shaft	Electricity.
Latamore	Single entry, room and pillar	Natural	Horse.
Old Abe	do	do	Do.
Akers	Slope and three-entry system	Air shaft	Steam.
Ayers	Slope	Natural	Whim.

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During the fiscal year ended June 30, 1899, I did not visit and inspect the four mines located in San Juan County, namely, the Morgan, Stevens, Bruce, and Thomas mines, and the method of working, ventilation, and power used was not reported to me as mine inspector. The said four mines are not, therefore, tabulated in the above table.

MINES NOT IN OPERATION.

Hartsell mine, Colfax County, not operated this year.
Mulholland mine, Bernalillo County, not operated this year.
Smith No. 1 mine, Colfax County, not operated this year.
Sterling mine, Rio Arriba County, not operated this year.
Waldo mine, Santa Fe County, not operated this year.
Miller Gulch mine, Santa Fe County, not operated this year.
Beacon Hill mine, Bernalillo County, not operated this year.
Canavan & Bailey mine, Bernalillo County, not operated this year.
Monero No. 3 mine, Rio Arriba County, not operated this year.

MINES ABANDONED THIS YEAR.

White Ash mine, Santa Fe County, N. Mex.
Lumberton mine, Rio Arriba County, N. Mex.

NEW MINES OPENED THIS YEAR.

Stewart mine, Bernalillo County, N. Mex.
Old Abe mine, Lincoln County, N. Mex.
Akers mine, Lincoln County, N. Mex.
Ayers mine, Lincoln County, N. Mex.
Latamore mine, Colfax County, N. Mex.

Prices paid for labor, mining coal, etc., by the Crescent Coal Company, Gallup, N. Mex.

Mining coal per ton of 2,000 pounds, screened		$0.70
Driving entry	per yard	2.00
Room turning		4.00
Crosscut	per yard	1.50
Timbers	per set	.50
Company men under ground	per day	3.00
Boys attending to doors	do	1.00
Engineers	per month	80.00
Boiler men	per day	2.25
Tipple men	do	3.00
Blacksmiths	do	3.00
Blacksmiths' helpers	do	2.50
Carpenters	do	3.00

Prices of powder and supplies for miners of the Crescent Coal Company.

Powder	per keg	$4.00
Lamp oil	per gallon	1.25
Lamp cotton	per ball	.05
Squibs	per box	.25

Prices paid for labor, mining coal, etc., by the Cerrillos Coal Railroad Company, at Madrid, N. Mex.

Mining coal per ton of 2,000 pounds, screened	White ash	$0.70
	Cook & White	.85
	Lucas	.90
Driving main entry	per yard	3.00
Driving back entry	do	1.75
Driving crosscuts	do	1.50
Driving main slope when in natural coal	do	6.00
Driving main slope when in faults or solid rock	do	9.00
Driving raised planes	do	1.75
Turning rooms off entry and driving room 30 feet		8.00
Setting rough 7-foot timbers		1.00
Setting timbers over 7 feet in length		2.00
Setting 7-foot props		.07

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Wages paid:

Pit bosses	per day	$3.00
Fire bosses	do	3.00
Tracklayers	do	2.75
Company timbermen	do	2.75
General company men	do	2.60
Single mule drivers	do	2.60
Team drivers	do	2.75
Rope riders	do	3.00
Car couplers	do	2.75
Assistants to company men	do	2.00

Prices of powder and supplies for miners of the Cerrillos Coal Railroad Company.

Powder	per keg	$2.60
Lamp oil	per gallon	.85
Lamp cotton	per ball	.05
Squibs	per box	.25

PRODUCTION OF COKE.

The Colorado Fuel and Iron Company, of Denver, Colo., started the Waldo ovens, at Waldo, N. Mex., on or about the 1st of September, 1898, and also started the Gardiner ovens, at Gardiner, N. Mex., on or about the 1st of November, 1898, and their production up to the end of the fiscal year, June 30, 1899, was 29,586 tons of coke. The coal used at these ovens came from the Starkville mine, Las Animas County, Colo. The coke made at the Waldo ovens runs from 85 to 87 per cent in fixed carbon, 11 to 13 per cent in ash, 1 per cent in moisture, and three-fourths per cent in volatile matter. It takes about 1.55 tons of coal to make 1 ton of coke.

From the Blossburg mine 7,134 tons of coal was made into coke, but the company did not furnish me the number of tons of coke made from this amount of coal.

The coke produced was shipped and sold to the different smelting plants in New Mexico, Arizona, and old Mexico; also to the plants in El Paso, Tex.

Names and addresses of superintendents or managers or pit bosses of the mines of the Territory.

Name of mine.	Post-office.	Officers.
Sunshine	Gallup	W. M. Weaver, general manager; Hugh McGinn, superintendent.
Gallup	do	Do.
Crown Point	do	Do.
Catalpa	do	Do.
Otero	do	Alex. Bowie, general manager; John Stewart, superintendent; James W. Bowie, M. E.
Thatcher	do	Do.
W. A. Clark	do	W. L. Bretherton, agent.
Rocky Cliff	do	Stephen Canavan, manager.
Stewart	do	William Stewart, manager.
White Ash	Madrid	James Duggan, superintendent.
Lucas	do	Do.
Cook and White	do	Do.
Blossburg	Gardiner	James Van Houton, vice-president; J. A. Wigg, superintendent.
Smith No. 2	Raton	Albert Shaw, manager.
Mesa	do	John Honeyfield, manager.
Latamore	do	G. B. Latamore, manager.
Carthage	San Antonio	Hilton & Luerra, managers.
Monero Nos. 1 and 2	Monero	J. H. Crist, manager.
Omara	Santa Fe	Frederick Muller, manager.
Akers	Gray	T. L. Welles, superintendent.
Ayers	do	Do.
Old Abe	White Oaks	John Y. Hewett, president.

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AIR MEASUREMENTS.

The following table shows the number of cubic feet of air entering the mines and returning per minute, measured at intake and outlet:

Name of mine.	Date.	Intake.	Outlet.
Otero	Sept. 26, 1898	12,960	13,750
	Nov. 18, 1898	17,600	18,360
	Jan. 12, 1899	11,670	12,960
	Apr. 13, 1899	15,780	.....
	May 29, 1899	22,150	22,750
Gallup	Sept. 28, 1898	43,740	44,500
	Nov. 19, 1898	27,750	29,960
	Jan. 10, 1899	46,200	47,800
	Apr. 12, 1899	27,400	.....
	May 29, 1899	33,000	.....
Sunshine	Sept. 27, 1898	23,520	24,240
	Nov. 14, 1898	28,800	30,240
	Jan. 9, 1899	25,600	27,840
Crown Point	Nov. 17, 1898	15,510	16,200
	Jan. 11, 1899	16,000	16,800
	Apr. 14, 1899	18,400	.....
	May 27, 1899	7,150	7,650
Thatcher	Jan. 7, 1899	3,840	3,915
	Apr. 16, 1899	5,040	5,460
Rocky Cliff	Nov. 10, 1898	4,320	4,500
	Jan. 4, 1899	3,000	3,255
	May 23, 1899	1,750	1,925
Catalpa	Sept. 23, 1898	8,400	8,640
	Nov. 15, 1898	10,150	11,520
	Jan. 5, 1899	8,910	9,600
	Apr. 10, 1899	7,980	.....
	May 25, 1899	6,300	6,720
Stewart	Jan. 14, 1899	2,160	2,240
	Apr. 6, 1899	2,100	.....
W. A. Clark	Sept. 22, 1898	6,720	6,840
	Nov. 12, 1898	7,560	7,770
	Jan. 6, 1899	4,800	5,440
	Apr. 7, 1899	4,320	4,680
	May 24, 1899	11,200	12,000
White Ash	Sept. 7, 1898	34,760	41,280
	Oct. 11, 1898	38,000	42,000
	Nov. 29, 1898	39,000	40,320
	Dec. 21, 1898	47,600	50,400
	Jan. 23, 1899	40,200	42,480
	Feb. 23, 1899	39,000	40,300
	Mar. 22, 1899	37,800	38,640
Lucas	Sept. 2, 1898	11,000	.....
	Sept. 3, 1898	.....	11,500
	Oct. 12, 1898	12,000	12,250
	Nov. 29, 1898	17,760	19,500
	Dec. 22, 1898	13,720	.....
	Jan. 27, 1899	17,000	18,900
	Feb. 24, 1899	14,880	15,750
	Mar. 27, 1899	14,400	14,700
	May 18, 1899	16,800	18,000
	June 10, 1899	5,040	5,200
Cook and White	Sept. 5, 1898	39,000	45,900
	Oct. 13, 1898	39,200	.....
	Oct. 14, 1898	.....	47,500
	Nov. 26, 1898	39,200	.....
	Nov. 28, 1898	.....	41,000
	Dec. 19, 1898	39,200	43,225
	Jan. 24, 1899	47,520	.....
	Jan. 26, 1899	.....	51,300
	Feb. 25, 1899	43,800	.....
	Mar. 23, 1899	42,000	.....
	Mar. 24, 1899	.....	47,500
	Apr. 24, 1899	38,400	.....
	May 9, 1899	41,760	.....
	May 11, 1899	42,240	.....
	June 12, 1899	39,600	.....
Monero No. 1	Sept. 12, 1898	8,000	8,400
	Oct. 28, 1898	7,600	8,000
	Dec. 9, 1898	8,800	9,200
	Feb. 13, 1899	4,550	4,940
	June 16, 1899	6,300	6,650
Monero No. 2	Sept. 13, 1898	2,340	2,400
	Oct. 26, 1898	2,660	2,680
	Dec. 8, 1898	4,000	4,100
	Feb. 11, 1899	2,700	2,850
Carthage	Nov. 9, 1898	2,310	2,450
Smith No. 2	Dec. 12, 1898	1,520	1,650
	Feb. 18, 1899	2,100	2,170
	May 20, 1899	1,320	.....
	June 28, 1899	2,100	2,205
Mesa	Dec. 16, 1898	1,500	1,560

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THE COAL TRADE.

The coal trade has been very brisk during the year, and the demand for the coal produced in the Territory has been much greater than the supply. At Madrid and Blossburg the companies could not fill more than two-thirds of orders received, partly on account of not having the mines developed, but mostly on account of scarcity of miners. Otherwise the production would have been many tons greater.

GENERAL REMARKS.

In my previous annual reports I have made mention, under the above heading, of such matters as I deemed of vital importance to the miner and the mining industry of the Territory, and feel it my duty so to do again, in face of the possible charge and criticism that the subject has heretofore been mentioned.

The thickness of the veins in nearly all of the mines where fire damp is generated is favorable to their proper ventilation, and while gas can not be prevented from generating, it could undoubtedly be prevented in the entries and rooms by having proper ventilation, also by crosscuts being driven more closely together, thus sweeping the gas out as fast as it generates.

Every superintendent and pit boss should make it his imperative duty to provide ventilation as the work advances, and he should not delay until he is compelled to make the proper provisions by allowing gas to form so as to cause severe and disastrous explosions.

Proper care and provisions and the knowledge that "eternal vigilance is the price of safety" would be a safeguard to the investments of the owner, and security for the life and limbs of those employed in the mines.

There are no Territorial laws governing the coal industries of this Territory, and when the importance of the subject is properly represented before the Territorial legislature, certain restrictions should be placed on the matter of handling powder, as well as to the ventilation and other matters, which would insure greater safety and protection to the miners and other persons connected with this growing industry.

In all coal mines throughout the Territory the mine officials have expressed their willingness to comply with all requirements of the United States laws governing coal mining, and the main problem which confronts the mine inspector is to get the miners impressed with the necessity of looking out for themselves and use ordinary precaution in their own behalf.

A coal miner of experience needs no promptings or hints that the roof of his entry or room is in bad condition, and he should not need to be compelled to put in the necessary props or timber to insure his protection, and carelessness in this respect often not only jeopardizes his life, but works to the injury of other miners and to the detriment of the management.

There may be some of the workingmen or miners who would like to express their opinions relative to the ventilation or workings of the mine, and probably some would wish to accompany the mine inspector on his tour through the mines. This the inspector would heartily indorse, and would suggest that the miners select one of their number to accompany him through the mine while inspecting. A complaint may be made that the inspector on visiting the mine always asks for the superintendent or pit boss. There are two reasons why the inspector goes to the superintendent or pit boss.

In the first place, the miner does not wish to lose a day or so of work; and the second reason is that the pit boss is a responsible party for all defects in the working of the mine and is the proper person for the inspector to give instructions and orders to relative to ventilation and timbering at any point that the inspector thinks needs regulating.

But what would materially assist the inspector in the performance of his duty would be for the miners or workmen to adopt a system of reporting the condition of the mine to the inspector. This plan would probably result in a material benefit to the workingmen and could result in no injury to those concerned who intended to comply with the law, and would have a tendency to compel those who are careless to do their duty.

Some of the workmen say that they are afraid to complain to the inspector for fear of being discharged; but this should not be allowed. The inspector has a right to question the workmen, and they should feel that they have a right to furnish information required by the inspector.

In many instances the inspector has found the miners working in their rooms and other working places without having them well timbered, and when ordered to timber their places the miner invariably wants to load a car or two more of coal before timbering, and in many instances while loading the coal the roof falls upon him, either causing a fatal or non-fatal accident. This delay in timbering, in a large measure, accounts for the number of accidents of a fatal and non-fatal character.

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INSTRUCTIONS AND RULES.

The following are the instructions and rules under which the Cerrillos Coal Railroad Company mines are to be governed, and all fire bosses will observe the same:

First. Do not remain off of duty without giving the foreman due notice, so that he can put a man in your place.

Second. On beginning your shift's work, your regular daily route will be: Commencing at mouth of slope, travel to face, and return from lower entry in slope to the upper entry in same, making a regular travel in all air courses, and examine all places, including abandoned as well as working places, in each entry, with Davy safety lamps, or such other improved lamps as may be in use at the time.

Third. If you find the brattice or canvas shot down or damaged, repair it at once, so as to conduct the air to the face of the workings as soon as possible, and report in every instance where canvas is shot down to the foreman.

Fourth. Report in writing all places where gas is found; also verbally to foreman.

Fifth. If air courses are obstructed in any way by water or rock, etc., report same in writing and verbally to foreman, that he may remedy it at once.

Sixth. Where roof of air course is bad, and looks dangerous and should be timbered or taken down, report same daily in writing and verbally to foreman.

Seventh. Do not allow any man to go into his place with a naked light where standing gas is found or being generated freely. Give him a locked safety lamp and instruct him to use it instead of a naked light until further advised by you. Any person that you find disobeying this rule, report same to foreman at once, and the miner so disobeying will be discharged from the employment of the company.

Eighth. If you should find a large quantity of gas at any time in the mine between shifts, report same at once to foreman, and do not allow the men to go forward on the slope farther down than lamp house, and the foreman will know from your report how to instruct further.

Ninth. Quantities of gas found in places on account of brattice or canvas shot down should always be removed by the fire boss and not allow the men to enter the place under any consideration until the gas is removed.

Tenth. Instruct men who are working with safety lamps to brush all gas from their places before firing shots.

Eleventh. Any fire found in the mine from shot firing or otherwise must be put out promptly, and call for assistance from any point if you are unable to extinguish it yourself.

Twelfth. Examine and clean all safety lamps thoroughly after each shift's use and do not allow any defective lamps to be taken from the lamp house.

Thirteenth. Any lamps that are damaged by any person using them, or if they fail to return them after the expiration of each shift, report same to foreman and damages will be charged against them.

Fourteenth. Report all places to foreman where you think there is not a sufficient flow of air traveling to prevent the accumulation of gases.

Fifteenth. Travel the main return-air ways daily without fail, and see that same are in perfect condition.

Sixteenth. Put the danger mark (X X) at the entrance of all places that contain any standing gas.

RULES GOVERNING THE CERRILLOS COAL RAILROAD COMPANY MINE FANS.

First. The fireman will attend to the fans when the engineers are off duty.

Second. The engineer when on duty will have full charge of the fans and see that they are properly attended to.

Third. On commencing the shift's work visit the fans and see whether they are in good order or not.

Fourth. If you find any of the fans in bad order notify the master mechanic at once.

Fifth. Do not stop the fan for any slight adjustment while men are in the mine.

Sixth. If either fan should get out of order, so that it is necessary to stop it, close the trapdoor near the fan immediately after stopping the fan, and open trapdoor immediately when the fan is started up again.

Seventh. Notify the foreman before you stop either or both of the fans.

Eighth. Do not stop both fans at one time while men are in the mine unless you see that they will be totally destroyed by continuing to run them, and not then until you notify the foreman to get the men out of the mine.

Ninth. If a sudden breakdown should take place, or you should find one of the fans stopped, notify the foreman at once; then close the trapdoor and notify the master mechanic.

Tenth. In case of breakdown occurring to either of the fans and the master mechanic is not close at hand, the engineer and fireman must do everything within their power to get the fan in operation again as soon as possible.

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Eleventh. Fans are to be kept speeded as per verbal instructions given to you from time to time by the master mechanic or superintendent.

Twelfth. Visit the fan every hour and notice if all the working parts are in good order.

Thirteenth. Notice the speed of the fan every thirty minutes.

Fourteenth. If anything occurs to the boilers or steam-pipe connections, or if a sufficient quantity of steam can not be kept up for both fans and hoisting plant, stop hoisting till such time as you can recover and maintain the usual pressure of steam.

RECOMMENDATIONS.

Deeming the present law governing the mining industry in the Territories as inadequate, especially in mines generating fire damp, I beg leave to offer a few suggestions in the way of amendments thereto, as I have suggested and recommended in my previous reports.

First. That the owner or operator of each and every coal mine employing ten or more men should make, or cause to be made, an accurate map or plan of the workings of such coal mine on a scale not exceeding 100 feet to 1 inch, showing the bearings and distances of the workings and the general inclinations of the strata, or any material deflections in such workings, and the boundary lines of such coal mines, which shall be kept for the use of the inspector at the office of said mine in the county where such mine is located, and shall also furnish a true copy of such map or plan to the inspector of coal mines, to be filed in his office; and said owner or agent shall be caused to make, on or before the 10th day of January and July of each and every year, a statement showing the workings of the coal mine or mines. If the agent or owner of any coal mine shall neglect or refuse, or for any cause fail for the period of one month after the time described to furnish said map or plan as above required, or if the inspector should find or have reason to believe the map or plan was inadequate in any material part, he be authorized to cause a correct map or plan of the actual workings of such coal mine, said map or plan to be made at the expense of the owner thereof.

Second. The owner or agent of any coal mine, whether shaft, slope, or drift, shall provide and maintain for every such mine an amount of ventilation not less than 150 cubic feet (where fire damp is known to exist) per minute for each and every person employed in said mine, also an amount of ventilation of not less than 500 cubic feet per minute for each mule or horse used in such mine, which shall be distributed throughout the mine in such a manner as to dilute and render harmless and expel the noxious and poisonous gases from each and every working place in the mine. Break throughs or air ways should be driven at least every 60 feet, or closer if deemed necessary by the inspector, and an air way or break through be made at the face of each and every abandoned room or entry. All break throughs, except those last named, near the working face of the mine, shall be closed up and made air-tight by brattice, trapdoor, or otherwise, so that the current of air in circulation in the mine may sweep to the interior of the mine, where the persons employed in such mine are at work.

Third. Within twenty-four hours after abandonment of any working face in the mine all tracks, ties, and other material, if any, should be taken out, and all entrances and approaches to that particular place should be bratticed up or filled in with "goaf," except openings for ingress and egress of air, and in these two openings, immediately in the openings and not in the room and working face, danger signals should be placed in such a manner that an intruder could not avoid seeing them.

Fourth. All mines to be provided with artificial means of ventilation necessary to provide a sufficient quantity of air, such as fanning or suction fans, exhaust steam, furnaces, or other contrivances of such capacity and power as to produce and maintain an abundant supply of air; but in case a furnace shall be used for ventilating purposes it shall be built in such a manner as to prevent the communication of fire to any part of the works by lining the upcast with incombustible material for a sufficient distance up from said furnace. All mines generating fire damp shall be kept clear of standing gas, and every working place shall be carefully examined every morning with a safety lamp by a competent person or persons before any of the employees are allowed to enter the mine, and the persons making such examinations shall mark on the face of the workings the day of the month and report the condition of the mine at or near the pit top to the superintendent or pit boss; and in all the mines, whether they generate fire damp or not, the doors used in assisting or directing the ventilation of the mine shall be so hung and adjusted that they will shut up of their own accord and can not stand open. The owner or agent shall employ a practical and competent overseer, to be called a mining boss, who shall keep a careful watch over the ventilating apparatus and the air ways, traveling ways, pumps, timber, and drainage; also shall see that as the miners advance their excavations all loose coal, slate, and rock overhead are carefully secured against falling in on the traveling way, and that sufficient props and caps of suitable

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length and size are furnished for the places where they ought to be used and placed in the working places of the miners. Such person should measure the ventilation at least three times per week at the inlet and outlet, and also near the face of all entries. A record, on properly printed blanks, should be kept of such measurements, and at the end of each week the mine inspector should be mailed a copy of said air measurements.

Fifth. The mining boss, or other competent person, should make daily inspections of all ropes, chains, cages, and other hoisting apparatus, guides, and shaft timbers, and make a record of such daily inspection in a book kept in the office of such mine for that purpose. The mine boss should keep a daily record of any defect in the ventilating appliances and any standing gas that may be found in the mine, designating the entry or room in which the gas has been found. The record of the aforesaid inspection shall at all times be kept open for the inspection of the mine inspector.

Sixth. I further recommend that bore holes be kept in advance of the face of each and every working place, and, if necessary, on both sides when driving toward an abandoned mine or part of a mine suspected to contain inflammable gases or to be inundated with water, said bore holes to be kept at least 30 feet in advance of the workings.

Respectfully submitted.

JOHN W. FLEMING,
United States Coal Mine Inspector for the Territory of New Mexico.

LAWS GOVERNING THE WORKINGS OF COAL MINES IN THE TERRITORIES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in each organized and unorganized Territory of the United States wherein are located coal mines, the aggregate annual output of which shall be in excess of one thousand tons per annum, the President shall appoint a mine inspector, who shall hold office until his successor is appointed and qualified. Such inspector shall, before entering upon the discharge of his duties, give bond to the United States in the sum of two thousand dollars, conditioned for the faithful discharge of his duties.

SEC. 2. That no person shall be eligible for appointment as mine inspector under section one of this act who is not either a practical miner or mining engineer and who has not been a resident for at least six months in the Territory for which he shall be appointed; and no person who shall act as land agent, manager or agent of any mine, or as mining engineer, or to be interested in operating any mine in such Territory, shall be at the same time an inspector under the provisions of this act.

SEC. 3. That it shall be the duty of the mine inspector provided for in this act to make careful and thorough inspection of each coal mine operated in such Territory, and to report at least annually upon the condition of each coal mine in said Territory with reference to the appliances for safety of the miners, the number of air or ventilating shafts, the number of shafts or slopes for ingress or egress, the character and condition of the machinery for ventilating such mines, and the quantity of air supplied to the same. Such report shall be made to the governor of the Territory in which such mines are located and a duplicate thereof forwarded to the Secretary of the Interior, and in case of an unorganized Territory directly to the Secretary of the Interior.

SEC. 4. That in case the said mine inspector shall report that any coal mine is not properly constructed or not furnished with reasonable and proper machinery and appliances for the safety of the miners and other employees, it shall be the duty of the governor of such organized Territory, it shall be the duty of the Secretary of the Interior, to give notice to the owners or managers of said coal mine that the said mine is unsafe and notify them in what particular the same is unsafe, and require them to furnish or provide such additional machinery, slopes, entries, means of escape, ventilation, or other appliances necessary to the safety of the miners and other employees within a period to be in said notice named, and if the same be not furnished as required in said notice, it shall be unlawful after the time fixed in such notice for the said owners or managers to operate said mine.

SEC. 5. That in all coal mines of the Territories of the United States the owners or managers shall provide at least two shafts, slopes, or other outlets, separated by natural strata of not less than one hundred and fifty feet in breadth, by which shafts, slopes, or outlets distinct means of ingress and egress shall always be available to the persons employed in said mine. And in case of the failure of any coal mine to be so provided, it shall be the duty of the mine inspector to make report of such facts, and thereupon notice shall issue, as provided in sec. 4 of this act, and with the same force and effect.

SEC. 6. That the owners or managers of every coal mine at a depth of one hundred

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feet or more shall provide an adequate amount of ventilation of not less than fifty-five cubic feet of pure air per second, or thirty-three hundred cubic feet per minute, for every fifty men at work in said mine, and in like proportion for a greater number, which air shall by proper appliances or machinery be forced through such mine to the face of each and every working place, so as to dilute and render harmless and expel therefrom the noxious or poisonous gases, and all workings shall be kept clear of standing gas.

SEC. 7. That any mine owner or manager who shall continue to operate a mine after failure to comply with the requirements of this act and after the expiration of the period named in the notice provided for in section 4 of this act, shall be deemed guilty of a misdemeanor, and shall be fined not to exceed five hundred dollars.

SEC. 8. That in no case shall a furnace shaft be used or for the purpose of this act be deemed an escape shaft.

SEC. 9. That escape shafts shall be constructed in compliance with the requirements of this act within six months of the date of the passage hereof, unless the time shall be extended by the mine inspector, and in no case shall the said time be extended to exceed one year from the passage of this act.

SEC. 10. That a metal-speaking tube from the top to the bottom of the shaft or slope shall be provided in all cases, so that conversation can be carried on through the same.

SEC. 11. That an improved safety catch shall be provided and sufficient cover overhead on every carriage used in lowering or hoisting persons. And the mine inspector shall examine and pass upon the adequacy and safety of all such hoisting apparatus.

SEC. 12. That no child under twelve years of age shall be employed in the underground workings of any mine. And no father or other person shall misrepresent the age of anybody so employed. Any person guilty of violating the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not to exceed one hundred dollars.

SEC. 13. That only experienced and competent and sober men shall be placed in charge of hoisting apparatus or engines. And the maximum number of persons who may ascend or descend upon any cage or hoisting apparatus shall be determined by the mine inspector.

SEC. 14. That it shall be lawful for any inspector to enter and inspect any coal mine in his district and the work and the machinery belonging thereto at all reasonable times, but so as not to impede or obstruct the workings of the mine; and to make inquiries into the state of the mine, works, and machinery, and the ventilation and mode of lighting the same, and into all matters and things connected with or relating to the safety of the persons employed in or about the same, and especially to make inquiry whether the provisions of this act are complied with; and the owner or agent is hereby required to furnish means necessary for such entry, inspection, examination, and inquiry, of which the said inspector shall make an entry in the record of his office, noting the time and material circumstances of the inspection.

SEC. 15. That in all cases of fatal accident a full report thereof shall be made by the mine owner or manager to the mine inspector, said report to be in writing and made within ten days after such death shall have occurred.

SEC. 16. That as a cumulative remedy, in case of the failure of any owner or manager of any mine to comply with the requirements contained in the notice of the governor of such Territory or the Secretary of the Interior, given in pursuance of this act, any court of competent jurisdiction, or the judge of such court in vacation, may, on the application of the mine inspector, in the name of the United States and supported by the recommendation of the governor of said Territory, or of the Secretary of the Interior, issue an injunction restraining the further operation of said mine until such requirements are complied with, and in order to obtain such injunction no bond shall be required.

SEC. 17. That whenever the terms "owner or manager" are used in this act the same shall include lessees or other persons controlling the operation of any mine. And in case of violations of this act by any corporation, the managing officers and superintendents, and other managing agents of such corporation, shall be personally liable and shall be punished as provided in the act for owners and managers.

SEC. 18. That the mine inspectors provided for in this act shall each receive a salary of two thousand per annum and their actual traveling expenses when engaged in their duties.

SEC. 19. That whenever any organized Territory shall make or has made provisions by law for the safe operations of mines within such Territory, and the governor of such Territory shall certify said fact with a copy of said law to the Secretary of the Interior, then and thereafter the provisions of this act shall no longer be in force in such organized Territory, but in lieu thereof the statute of such Territory shall be operative in lieu of this act.

Approved March 3, 1891.

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FINANCIAL.

I have the honor to submit the following report of the operations and condition of the treasury for the past two years, from November 30, 1896, to the close of business, June 30, 1899.

Very respectfully, your obedient servant,

J. H. VAUGHN,
Territorial Treasurer.

REVENUES AND EXPENDITURES.

The total revenues and expenditures of the Territory during these two years are shown in the following table:

REVENUES.

Title of fund or account.	1897.	1898.
Licenses	$6,249.52	$63.24
Taxes	194,324.37	252,425.60
Fees paid by district court clerks	8,460.20	7,320.79
Proceeds of convicts' earnings and support of United States prisoners in the New Mexico Penitentiary	6,991.59	7,459.31
Cattle indemnity fund	14,000.00	12,000.00
Interest on deposits	4,283.15	2,718.97
Repayments	126.92	69.58
Insurance companies' licenses	1,080.00	----------
Fees paid by secretary of the Territory	1,065.00	2,519.00
Pullman Palace Car Co	117.50	91.97
Sale of Compiled Laws of 1897	----------	1,878.50
	236,678.25	287,046.96

Proceeds of capitol rebuilding bonds	$73,125
Proceeds of Insane Asylum bonds	30,000
Money borrowed to complete payment of interest coupons under section 2607, Compiled Laws of 1897	51,600
United States annual appropriation for Agricultural College	47,000

EXPENDITURES.

Interest fund	$64,430.00	[1] $86,142.50
Licenses	4,499.59	135.28
Penitentiary	36,199.91	40,035.05
Salary	34,660.81	35,382.14
Supreme court	856.22	626.75
Miscellaneous	31,778.72	41,373.95
Assessors	9,020.53	9,958.27
Transportation of convicts	3,408.42	4,066.01
Deficit fund forty-fourth fiscal year	88.80	----------
Territorial institutions	59,344.44	42,459.19
Branch agricultural experiment station	85.18	----------
Cattle sanitary board	17,148.72	16,915.37
Interest on deposits	4,111.29	876.76
School fund	1,288.36	28.34
Deficiency forty-sixth fiscal year	836.39	22.48
Special court fund	1,283.87	3.51
Normal schools	9,326.15	9,025.54
Capitol rebuilding fund	11,547.79	34,323.86
Corporation fund	967.40	1,248.16
Legal expense fund	1,272.25	227.75
Territorial purposes forty-eighth fiscal year	8,214.00	----------
Special tax	----------	21,763.24
Sheep sanitary board	----------	865.00
Compilation fund	----------	1,836.00
	295,318.84	347,315.15

United States annual appropriation for agricultural college	$47,000
Paid notes given for the interest fund	23,600

[1] The excess of the interest payments in 1898 above the annual interest charge represents the payment of arrearages of 1895 and 1896.

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I respectfully call your attention to the importance of providing additional funds for the interest fund, which is now in arrears to the extent of $40,000, and will be, at the close of the present fiscal year, on the first Monday of March, 1899, to the extent of $55,000, as shown by the following summary:

Treasurer's notes outstanding, given for loans to complete the payment of coupons	$28,000
Interest due up to date of this report	1,874
Interest due January 1, 1899	9,939
Interest due March 1, 1899	15,430
Total arrearage to close of fiscal year	55,243

About $25,000 of this arrearage existed two years ago, and the attention of the last legislature was called to the necessity of making some provision for its payment, but no action was taken. The remainder of the arrearage has arisen during the past two years, from the failure of the cash receipts from taxation to equal the appropriations. I have paid the coupons promptly at their maturity, in all cases, but to do so I have had to borrow from other funds, when conditions permitted, and when this was not possible, I have borrowed under the provisions of section 2607, Compiled Laws. Although I will receive quite a sum for the interest fund, from the tax of 1898, which will soon begin to come into the treasury, yet all this money, and more, will be required to meet the coupons maturing after the beginning of the next fiscal year, so that it is necessary to provide the full amount of the deficiency, $55,000. To lay a tax for this purpose will require about 3 mills of taxation, and will not produce the amount in full, for over a year, and as taxation is already heavy, I suggest the propriety of a short-time bond issue, say ten-year 6 per cent bonds with option to the Territory to redeem at any time after one year from their date, and with the provision for an annual tax beginning in 1899, sufficient to pay all the bonds by the time of their maturity. A tax of one-quarter of 1 mill will be ample to begin with, and the rate can be reduced from year to year. It is of the utmost importance that this or some other provision be made for this fund, as it will not be possible for the treasurer much longer to take care of the coupons as they mature, by the makeshift processes which have answered for the past four years.

LIST OF SCHEDULES ACCOMPANYING THIS REPORT.

No. 1. Statement of the assessed valuation, tax rate, arithmetical and cash product of the rate for the years 1896 and 1897.
No. 2. Appropriations of 1897 and 1898 and cash receipts from the tax levied for their payment.
No. 3. List of depository banks.
No. 4, Special account of moneys paid treasurer by district court clerks.
No. 5. Treasurer's statements of receipts and disbursements for the fourth quarter forty-seventh fiscal year.
No. 6. A similar statement for the forty-eighth fiscal year.
No. 7. A similar statement for the first three-quarters of the forty-ninth fiscal year.
No. 8. Treasurer's general account.
No. 9. List of fire insurance companies.
No. 10. Statement of the Territorial debt.

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SCHEDULE NO. 1.—*Statement of the assessed valuation, rate of taxation, arithmetical and actual cash product of the rate of taxation and the percentage of the cash product to the arithmetical product in the Territory of New Mexico for the years 1896 and 1897.*

County.	1896—Rate of taxation 7.75 mills.				1897—Rate of taxation 10.80 mills.			
	Assessed valuation.	Arithmetical product of tax.	Actual cash product of tax.	Percentage of cash to arithmetical product.	Assessed valuation.	Arithmetical product of tax.	Actual cash product of tax.	Percentage of cash to arithmetical product.
Bernalillo	$7,145,171.00	$55,375.08	$29,432.62	53	$7,395,184.00	$79,867.89	$35,586.96	44
Chaves	1,911,014.00	14,810.36	12,826.36	86	1,475,829.00	15,938.96	13,087.42	82
Colfax	2,457,110.00	19,042.60	16,735.11	87	2,722,180.00	29,399.55	20,348.01	69
Donna Ana	2,582,865.00	20,017.20	16,758.31	83	2,446,692.85	26,424.28	20,415.60	77
Eddy	1,284,375.00	9,953.91	7,161.04	71	1,113,075.00	12,021.22	8,665.88	61
Grant	3,334,490.00	25,842.30	19,289.79	74	3,468,236.45	37,456.96	23,880.53	63
Guadalupe	494,354.00	3,831.24	2,084.87	54	420,558.00	4,542.04	2,938.58	64
Lincoln	1,419,373.00	11,000.14	9,256.09	84	1,413,832.00	15,269.39	11,943.28	78
Mora	992,430.00	7,691.34	4,772.77	62	968,135.00	10,455.87	6,114.56	57
Rio Arriba	680,205.12	5,271.59	4,692.37	89	800,222.00	8,642.40	5,221.66	60
San Juan	386,927.00	2,998.68	2,071.12	69	729,310.00	7,876.56	2,407.53	30
San Miguel	4,684,105.00	36,301.81	15,979.25	44	4,209,564.00	45,463.29	17,895.36	39
Santa Fe	1,925,613.00	14,923.50	9,320.49	62	1,851,701.00	19,998.38	11,242.40	56
Sierra	1,098,335.00	8,512.10	6,754.15	79	1,055,072.30	11,394.79	9,137.45	80
Socorro	2,389,874.00	18,521.52	13,992.46	75	4,611,482.00	49,804.00	18,200.51	37
Taos	551,271.00	4,272.35	2,429.39	57	953,689.00	10,299.85	3,075.73	30
Union	1,217,550.00	9,436.01	7,959.34	84	1,174,850.00	12,688.38	9,109.98	71
Valencia	2,336,040.36	18,104.31	4,810.44	26	2,668,506.58	28,819.87	6,668.81	23
Total	36,091,192.48	285,906.04	186,325.97	65	39,478,119.18	426,263.68	225,940.25	50

The tax rate of 1896 was:
For Territorial purposes, 6 mills.
For Territorial institutions, 1.75 mills.
Included in the above table is a small tax of cattle and sheep but not sufficient to make any material variation on the result given.

The tax rate of 1897 was:
For Territorial purposes, 7 mills.
For Territorial institutions, 2.05 mills.
For special tax, 1.25 mills.
For capitol contingent sinking fund, 0.50 mills.

SCHEDULE NO. 2.—*Appropriations of 1897 and 1898; cash receipts from tax levies for their payment and cash product of special taxes for those years.*

Fund.	1897.		1898.	
	Appropriation.	Cash receipts.[1]	Appropriation.	Cash receipts.[2]
Interest fund	$63,440.00	.....	$63,440.00	.....
Penitentiary current expense fund	51,420.00	.....	40,220.00	.....
Salary fund	35,120.00	.....	35,120.00	.....
Supreme court fund	1,200.00	.....	1,200.00	.....
Miscellaneous fund	54,150.00	.....	48,100.00	.....
Transportation of convicts	5,000.00	.....	5,000.00	.....
Total	210,330.00	$136,811.29	198,080.00	$138,870.17

[1] Product of 6 mills taxation for Territorial purposes.
[2] Product of 7 mills taxation for Territorial purposes.

Percentage distributed for the forty-eighth fiscal year 65 per cent.
Percentage distributed for the forty-ninth fiscal year 71 per cent.

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SCHEDULE NO. 3.—*List of banks holding Territorial funds.*

Name of bank.	Amount applied for.	Amount of bond.	Amount of interest paid.	Balances in bank Dec. 3, 1898.
Albuquerque National Bank, general depository			$962.17	
Albuquerque National Bank, special			1,357.50	
The Bank of Commerce, Albuquerque, N. Mex	$20,000.00	$40,000.00	133.95	$2,277.96
First National Bank, Las Vegas, N. Mex	30,000.00	60,000.00	987.08	14,087.00
First National Bank, Albuquerque, N. Mex	30,000.00	60,000.00	1,026.56	25,086.89
Taos County Bank	10,000.00	20,000.00	395.36	5,088.42
New Mexico Savings and Trust Co., Albuquerque, N. Mex				1,583.28
San Miguel National Bank, Las Vegas, N. Mex	30,000.00	60,000.00	993.50	14,085.75
First National Bank, Raton, N. Mex	15,000.00	30,000.00	557.07	7,047.35
The Bank of Roswell	15,000.00	30,000.00	548.93	7,048.41
Total			6,982.12	76,255.06

SCHEDULE NO. 4.—*Special amount of moneys paid treasurer by the district court clerks.*

Clerk.	District.	Fourth quarter, 1896.	First quarter, 1897.	Second quarter, 1897.	Third quarter, 1897.	Fourth quarter, 1897.	First quarter, 1898.	Second quarter, 1898.	Third quarter, 1898.	Total.	Per cent of fees to salary.
Geo. L. Wyllys	1st.	$288.60									
C. H. Gildersleeve	1st.		$246.50	$252.35	$218.10	$337.20	$196.05				
A. M. Bergere	1st.						181.41	$215.40	$189.75	$2,125.36	43
O. N. Marron	2d.	298.10	764.65	1,050.00	457.50	468.65					
H. P. Owen	2d.					92.90	524.59	453.60	391.95	4,496.94	89
W. B. Walton	3d.	309.10	407.10	420.90	423.85	210.15	223.40				
W. P. Mitchell	3d.							601.20	278.95	2,874.65	57
Felix Martinez	4th	415.90	504.05	486.50	541.45	490.35	228.20				
Secundino Romero	4th						183.85	218.05	188.70	3,257.05	65
Geo. Curry	5th	64.90									
W. M. Driscoll	5th	312.40	298.30	287.90	417.05	626.90	708.60	585.00			
J. E. Griffith	5th								230.85	3,526.99	70
Total		1,684.00	2,220.60	2,497.65	2,057.95	2,226.26	2,241.10	2,073.25	1,280.20	16,280.99	46

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SCHEDULE No. 5.—*Receipts and disbursements for the fourth quarter of the forty-seventh fiscal year, beginning November 30, 1896, and ending February 27, 1897.*

Title of fund or account.	Balances Nov. 28, 1896.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Feb. 27, 1897.
Interest fund	$5,847.78	$116.04	$2,916.94		$5,960.58	$2,920.18
Licenses	667.91	2,610.03			2,186.59	1,091.35
Penitentiary current expense fund	3,615.26		1,788.52		2,387.98	3,015.80
Salary fund	8,097.81	1,684.00	1,835.56		7,901.67	3,715.70
Court fund	157.85		55.16			213.01
Miscellaneous fund	7,478.81		2,379.71		5,863.27	3,995.25
Compensation of assessors fund	1,748.01	3,309.61			4,138.64	918.98
Transportation of convicts	388.91		266.12		339.74	315.29
University of New Mexico	4,221.46	4.80	3,124.52		5,940.00	1,410.28
Agricultural College	397.90	11.18	2,061.42		969.33	1,501.17
New Mexico School of Mines	110.64	2.14	2,010.41		1,000.00	1,123.19
New Mexico Insane Asylum	873.29	2.14	4,455.36		3,443.99	1,886.80
Cattle indemnity fund	2,748.40	4,748.23			5,308.27	2,188.36
Interest on deposits	1,226.19	2,555.69			2,011.17	1,770.71
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	544.63		289.54			834.17
Special court fund	2,534.99				487.19	2,047.80
Normal school, New Mexico (Silver City)	104.16	21.86	1,976.36		1,247.02	855.36
Normal school, New Mexico (Las Vegas)	389.86	21.85	1,976.36		961.29	1,426.78
Territorial purposes, forty-seventh fiscal year		7,492.49		$7,492.49		
Territorial institutions, forty-seventh fiscal year		2,185.24		2,185.24		
New Mexico Military Institute	920.46		1,901.49			2,821.95
Territorial purposes, forty-eighth fiscal year	546.99	48,755.71			5,851.92	43,450.78
Territorial institutions, forty-eighth fiscal year	159.52	14,298.29		14,452.81		
Territorial purposes, forty-sixth fiscal year		2,089.06		2,089.06		
Territorial institutions, forty-sixth fiscal year		510.74		510.74		
Territorial institutions, forty-fifth fiscal year		357.13		357.13		
Deficit fund, forty-fourth fiscal year	38.80				38.80	
Territorial normal institutes	29.18	9.71				38.89
Branch agricultural experiment station	66.25	18.06			66.25	18.06
School fund	236.70				101.80	134.90
Total	43,306.36	90,748.50	27,037.47	27,037.47	56,205.50	77,849.36

RECAPITULATION.

Balances, November 28, 1896	$43,306.36
Receipts during quarter	90,748.50
Total to be accounted for	134,054.86
Payments during quarter	56,205.50
Balances, February 27, 1897	77,849.36

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SCHEDULE NO. 6.—*Receipts and disbursements during the forty-eighth fiscal year, March 1, 1897, to March 5, 1898.*

Title of fund or account.	Balances Mar. 1, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Mar. 5, 1898.
Interest fund	$2,920.18	$23,609.19	$55,470.00	.....	$69,495.00	$12,504.37
Licenses	1,091.35	3,699.66	.....	$2,344.73	2,446.28	.....
Penitentiary current expense fund	3,015.80	9,388.89	45,187.09	3.11	41,694.16	15,894.51
Salary fund	3,715.70	9,002.44	36,416.43	.....	34,677.79	14,456.78
Court fund	213.01	.....	1,179.96	.....	915.02	477.95
Miscellaneous fund	3,995.25	108.50	50,068.35	12.69	33,768.91	20,390.50
Compensation of assessors fund	918.98	9,515.41	.....	.....	8,898.27	1,536.12
Transportation of convicts	315.29	.....	4,895.65	.....	3,426.35	1,784.59
University of New Mexico	1,410.28	.05	7,210.90	.....	5,550.00	3,071.23
Agricultural College	1,501.17	.47	4,803.92	.....	4,285.75	2,019.81
New Mexico School of Mines	1,123.19	.03	4,802.72	.....	4,805.00	1,120.94
New Mexico Insane Asylum	1,886.80	30,000.03	13,426.95	.....	41,804.26	3,509.52
Cattle indemnity fund	2,188.36	16,990.46	.....	.....	16,090.02	3,088.80
Interest on deposits	1,770.71	2,477.27	.....	.....	2,100.12	2,147.86
Deficit fund, forty-second fiscal year	154.60	.....	.....	.....	.....	154.60
Deficiency fund, forty-sixth fiscal year	834.17	.....	24.70	.....	855.87	3.00
Special court fund	2,047.80	.....	.....	.....	800.19	1,247.61
Normal school, New Mexico (Silver City)	855.36	1.09	4,799.82	.....	4,612.07	1,044.20
Normal school, New Mexico (Las Vegas)	1,426.78	1.09	4,799.82	.....	3,844.68	2,383.06
Territorial purposes, forty-seventh fiscal year	.....	10,688.64	.....	10,688.64	.....	.....
Territorial institutions, forty-seventh fiscal year	.....	3,118.45	.....	3,118.45	.....	.....
New Mexico Military Institute	2,821.95	.....	4,795.96	.....	5,200.00	2,417.91
Territorial purposes, forty-eighth fiscal year	43,450.78	80,474.92	.....	120,711.70	3,214.00	.....
Territorial institutions, forty-eighth fiscal year	.....	23,542.80	.....	23,542.80	.....	.....
Capitol rebuilding fund	.....	73,125.00	.....	.....	14,773.71	58,351.29
Corporation fund	.....	1,834.00	.....	.....	1,626.40	207.60
The legal expense fund	.....	.....	1,500.00	.....	1,272.25	227.75
Territorial purposes, forty-ninth fiscal year	.....	60,768.08	.....	60,768.08	.....	.....
Territorial institutions, forty-ninth fiscal year	.....	17,926.97	.....	17,926.97	.....	.....
Capitol contingent sinking fund	.....	4,520.42	.....	.....	.....	4,520.42
Special tax	.....	10,619.11	.....	.....	.....	10,619.11
Sheep sanitary fund	.....	601.61	.....	.....	.....	601.61
Territorial institutions, forty-fifth fiscal year	.....	8.47	.....	8.47	.....	.....
United States annual appropriation, agricultural college	.....	23,000.00	.....	.....	23,000.00	.....
Territorial normal institutes	38.89	.45	.....	39.34	.....	.....
Branch agricultural experiment station	18.06	.87	.....	.....	18.93	.....
School fund	134.90	1,080.00	.....	.....	1,214.90	.....
Territorial purposes, forty-sixth fiscal year	.....	173.89	.....	173.89	.....	.....
Territorial institutions, forty-sixth fiscal year	.....	43.40	.....	43.40	.....	.....
Total	77,849.36	416,321.66	239,382.27	239,382.27	330,389.88	163,781.14

RECAPITULATION.

Balances, March 1, 1897	$77,849.36
Receipts during the forty-eighth fiscal year	416,321.66
Total to be accounted for	494,171.02
Payments during the forty-eighth fiscal year	330,389.88
Balances, March 5, 1898	163,781.14

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SCHEDULE NO. 7.—*Receipts and disbursements three quarters of the forty-ninth fiscal year, March 7, 1898, to December 3, 1898.*

Title of fund or account.	Balances Mar. 7, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Dec. 3, 1898.
Interest fund	$12,504.37	$28,000.00	$28,765.58	.....	$69,265.00	$4.95
Licenses	.....	12.27	.....	.....	2.00	10.27
Penitentiary current expense fund	15,894.51	5,062.01	18,509.52	.....	32,152.82	7,313.22
Salary fund	14,456.78	5,594.55	15,965.19	.....	27,463.49	8,553.03
Court fund	477.95	.....	528.40	.....	567.95	438.40
Miscellaneous fund	20,390.50	.....	22,014.50	.....	33,520.49	8,884.51
Compensation of assessor's fund	1,536.12	5,751.79	.....	.....	5,941.89	1,346.02
Transportation of convicts	1,784.59	.....	2,284.91	.....	3,708.34	361.16
University of New Mexico	3,071.23	.....	3,799.75	.....	6,190.00	680.98
Agricultural college	2,019.81	.....	2,533.15	.....	4,149.52	403.44
New Mexico School of Mines	1,120.94	.....	2,533.15	.....	2,850.00	804.09
New Mexico Insane Asylum	3,509.52	.....	8,981.75	.....	11,115.78	1,375.49
Cattle indemnity fund	3,068.80	9,923.55	.....	.....	12,665.80	346.55
Interests on deposits	2,147.86	1,949.16	.....	.....	876.76	3,220.26
Deficit fund, forty-second fiscal year	154.60	.....	.....	.....	.....	154.60
Defic ency fund, forty-sixth fiscal year	3.00	.....	.....	.....	3.00	.....
Special court fund	1,247.61	.....	.....	.....	.....	1,247.61
Normal school, New Mexico, (Silver City)	1,044.20	.....	2,533.15	.....	3,173.91	403.44
Normal school, New Mexico (Las Vegas)	2,383.06	.....	2,533.15	.....	4,512.77	403.44
Territorial purposes, forty-seventh fiscal year	.....	3,146.87	.....	$3,146.87	.....	.....
Territorial institutions, forty-seventh fiscal year	.....	918.48	.....	918.48	.....	.....
New Mexico Military Institute	2,417.91	.....	2,533.15	.....	4,500.00	451.06
Territorial purposes, forty-eighth fiscal year	.....	7,151.17	.....	7,151.17	.....	.....
Territorial institutions, forty-eighth fiscal year	.....	2,100.52	.....	2,100.52	.....	.....
Capitol rebuilding fund	58,351.29	69.58	.....	.....	31,097.94	27,322.93
Corporation fund	207.60	1,674.00	.....	1,292.44	589.16	.....
The legal expense fund	227.75	.....	.....	.....	227.75	.....
Territorial purposes, forty-ninth fiscal year	.....	76,477.62	1,292.44	77,770.06	.....	.....
Territorial institutions, forty-ninth fiscal year	.....	22,428.25	.....	22,428.25	.....	.....
Capitol contingent sinking fund	4,520.42	5,528.87	.....	.....	.....	10,049.29
Special tax	10,619.11	13,886.48	.....	.....	21,763.24	2,742.35
Sheep sanitary fund	601.61	912.49	.....	.....	865.00	649.10
Compilation fund	.....	1,878.50	.....	.....	1,836.00	42.50
Territorial purposes, fiftieth fiscal year	.....	1,477.72	.....	.....	.....	1,477.72
Territorial institutions, fiftieth fiscal year	.....	436.17	.....	.....	.....	436.17
United States annual appropriation, agricultural college	.....	24,000.00	.....	.....	24,000.00	.....
Total	163,781.14	218,380.05	114,807.79	114,807.79	303,038.61	79,122.58

RECAPITULATION.

Balances, March 7, 1898	$163,781.14
Receipts during the three quarters of the forty-ninth fiscal year	218,380.05
Total to be accounted for	382,161.19
Payments during the three quarters of the forty-ninth fiscal year	303,038.61
Balances, December 3, 1898	79,122.58

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SCHEDULE No. 8.—*Samuel Eldodt, Territorial treasurer, in account with the Territory of New Mexico.*

DR.					CR.
Nov. 28, 1896	To balance on hand	$43,746.49	Nov. 20, 1897	By warrants, coupons, and other paid evidences of indebtedness destroyed, as per certificate of governor and auditor	$295,136.35
	Receipts from all sources from Nov. 30, 1896, to Dec. 3, 1898, both dates inclusive, from taxes paid by collectors	446,930.91	Nov. 29, 1898	By warrants, coupons, and other paid evidences of indebtedness destroyed, as per certificate of governor and auditor	385,313.06
	From taxes paid by county treasurers	3,857.40	Dec. 3, 1898	By balance on hand	88,747.29
	From taxes paid by district attorneys	1,534.59			
	From taxes paid per order of court	739.83			
	From fees paid by district court clerks	16,280.99			
	From cattle sanitary board	26,000.00			
	From interest on deposits	6,982.12			
	From proceeds of convicts' earnings and support of United States prisoners, from superintendent of New Mexico penitentiary	14,450.90			
	Pullman Palace Car Company	209.47			
	Repayments	196.50			
	Proceeds of capitol rebuilding bonds	73,125.00			
	Proceeds of Insane Asylum	30,000.00			
	From Auditor, insurance company licenses	1,080.00			
	From sale of Compiled Laws of 1897	1,878.50			
	Money borrowed to complete payment of interest coupons under section 2607, Compiled Laws of 1897	51,600.00			
	United States annual appropriation for the college of agriculture and mechanic arts, Las Cruces	47,000.00			
	From fees paid by the secretary of the Territory of New Mexico	3,584.00			
	Total	769,196.70		Total	769,196.70

Balance consists of—

Cash on hand in bank	$79,122.58
Warrants paid since November 21, 1898	2,824.71
Coupons paid since November 21, 1898	6,800.00

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SCHEDULE NO. 9.—*List of fire insurance companies that complied with chapter 49, laws of 1897.*

Name of company.	Location.	Kind of security.	
Ætna Fire Insurance Co	Hartford, Conn	Capitol rebuilding bonds of the Territory of New Mexico.	$10,000
American Central	St. Louis, Mo	Cash deposit	10,000
Atlas Fire Assurance Co	London, England	Provisional indebtedness bonds $1,000, casual deficit bonds $6,000, refunding bonds $3,000.	10,000
British America Assurance Co	Toronto, Canada	Real estate mortgage	10,000
Continental Insurance Co	New York, N. Y	Provisional indebtedness bonds of the Territory of New Mexico.	10,000
Fire Association of Philadelphia	Philadelphia, Pa	Real estate mortgage	11,000
Fireman's Fund Insurance Co	San Francisco, Cal	Cash deposit	10,000
Hartford Fire Insurance Co	Hartford, Conn	Real estate mortgage	10,000
Insurance Company of North America.	Philadelphia, Pa	Provisional bonds of the Territory of New Mexico $2,000, Grant County funding bonds $8,000.	10,000
Liverpool and London and Globe Insurance Co.	Liverpool, England	Funding bonds of Socorro County $5,000, funding bonds of Bernalillo County $5,000.	10,000
London and Lancashire Insurance Co.	do	Grant County, N. Mex., railroad bonds.	10,000
National Fire Insurance Co	Hartford, Conn	City of Silver City, N. Mex., gold refunding bonds.	10,000
North British and Mercantile Insurance Co.	London, England	Territorial institutions bonds of the Territory of New Mexico.	10,000
Niagara Fire Insurance Co	New York, N. Y	Provisional indebtedness bonds of the Territory of New Mexico.	10,000
Northern Assurance Co	London, England	Cash deposit	10,000
Norwich Union Fire Insurance Co.	Norwich, England	Capitol contingent fund bonds $5,000, cash deposit $5,000.	10,000
Orient Fire Insurance Co	Hartford, Conn	Cash deposit	10,000
Palatine Insurance Co	Manchester, England.	Real estate mortgage $8,000, cash deposit $2,000.	10,000
Royal Insurance Co	Liverpool, England	Capitol contingent fund bonds of the Territory of New Mexico.	10,000
Scottish Union and National Insurance Co.	Edinburgh, Scotland	Cash deposit	10,000
Springfield Fire and Marine Insurance Co.	Springfield, Mass	Real estate mortgage	10,000
St. Paul Fire and Marine Insurance Co.	St. Paul, Minn	Grant County current expense bonds $3,000, Grant County funding bonds $7,000.	10,000

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SCHEDULE No. 10.—*Statement of the debt of the Territory of New Mexico.*

Title of bond.	Law of issue.	Amount outstanding.	Date of bond.	Rate of interest.	When interest is payable.
				P.ct.	
Capitol building bonds.	Sec. 2527, C. L.....	$100,000	Sept. 1,1884	7	March and September.
		100,000	Mar. 1,1885		
Capitol contingent fund bonds.	Chap. 45, Laws of 1887, p.88..	50,000	Apr. 1,1887	6	January and July.
Current expense bonds.	Chap. 44, Laws of 1887, p. 86..	50,000	May 2,1887	6	May.
		50,000	Nov. 1,1887		November.
		50,000	May 1,1888		May.
Provisional indebtedness bonds.	Chap. 122, Laws of 1889, p. 295.	100,000	May 1,1889	6	March and September.
		100,000	Sept. 2,1889		
Insane Asylum bonds.	Chap. 39, Laws of 1891, p. 87..	25,000	Oct. 1,1891	6	January and July.
Casual deficit bonds.	Sec. 7, chap. 61, Laws of 1893, p. 102.	101,800	May 1,1893	5	Do.
Refunding bonds.	Sec. 7, chap. 61, Laws of 1893, p. 104.	104,000	July 1,1893	6	Do.
Penitentiary refunding bonds.	Sec. 11, chap. 61, Laws of 1893, p. 105.	71,000	July 1,1894	6	March and September.
		10,000	Jan. 1,1895		
Territorial institution bonds.	Sec. 1, chap. 44, Laws of 1895.	35,000	July 1,1895	5	January and July.
New Mexico Military Institute bonds.	Sec. 1, chap. 42, Laws of 1895.	15,000	.....do.....	5	Do.
Insane Asylum bonds.	Sec. 1, chap. 43, Laws of 1895.	30,000	.....do.....	5	Do.
Capitol rebuilding bonds.	Sec. 7, chap. 39, Laws of 1895.	25,000	May 1,1895	5	May and November.
		50,000	Nov. 1,1895		
Capitol rebuilding bonds (second series).	Sec. 1, chap. 9, Laws of 1899..	60,000	May 1,1899	4	Do.
Certificates of indebtedness, series A.	Sec. 1, chap. 59, Laws of 1899.	47,000	.....do.....	6	March and September.
Certificates of indebtedness, series B.	Sec. 1, chap. 59, laws of 1899..	62,400	.....do.....	6	Do.
Approved claims to be refunded by certificates of indebtedness, series B.	Sec. 1, chap. 59, laws of 1899..	7,200	.....do.....	6	Do.

Total Territorial debt, June 30, 1899, $1,243,400.

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Quarterly statement of the Territorial treasurer of New Mexico, fourth quarter of the forty-eighth fiscal year, beginning November 29, 1897, and ended March 5, 1898.

Title of fund or account.	Balances Nov. 29, 1897.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Mar. 5, 1898.
Interest fund	$6,841.04		$22,540.83		$16,877.50	$12,504.37
Licenses	2,417.84	$60.17		$2,344.73	133.28	
Penitentiary current expense fund	6,878.04	2,397.30	14,504.51	3.11	7,882.23	15,894.51
Salary fund	5,332.44	2,226.24	14,816.75		7,918.65	14,456.78
Court fund	123.49		413.26		58.80	477.95
Miscellaneous fund	11,039.80		17,217.35	12.69	7,853.46	20,390.50
Compensation of assessors fund	944.95	4,607.55			4,016.38	1,536.12
Transportation of convicts	357.67		1,784.59		357.67	1,784.59
University of New Mexico	791.47		3,029.76		750.00	3,071.23
Agricultural college	2,148.07		2,019.81		2,148.07	2,019.81
New Mexico School of Mines	381.13		2,019.81		1,280.00	1,120.94
New Mexico Insane Asylum	5,817.29		7,168.05		9,475.82	3,509.52
Territorial normal institutes	39.34			39.34		
Cattle indemnity fund	1,511.73	5,826.64			4,249.57	3,088.80
School fund	28.34				28.34	
Interest on deposits	1,378.05	769.81				2,147.86
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	22.48				19.48	3.00
Special court fund	1,251.12				3.51	1,247.61
Normal school, New Mexico (Silver City)	363.25		2,019.81		1,338.86	1,044.20
Normal school, New Mexico (Las Vegas)	363.25		2,019.81			2,383.06
Territorial purposes, forty-seventh fiscal year		1,998.67		1,998.67		
Territorial institutions, forty-seventh fiscal year		583.66		583.66		
New Mexico Military Institute	398.10		2,019.81			2,417.91
Territorial purposes, forty-eighth fiscal year		6,110.67		6,110.67		
Territorial institutions, forty-eighth fiscal year		1,786.23		1,786.23		
Capitol rebuilding fund	61,577.21				3,225.92	58,351.29
Corporation fund	97.60	769.00			659.00	207.60
The legal expense fund	227.75					227.75
United States annual appropriation for agricultural college	23,000.00				23,000.00	
Territorial purposes, forty-ninth fiscal year	567.48	60,200.60		60,768.08		
Territorial institutions, forty-ninth fiscal year	180.51	17,746.46		17,926.97		
Capitol contingent sinking fund	40.52	4,479.90				4,520.42
Special tax	101.33	10,517.78				10,619.11
Sheep sanitary fund	15.38	586.23				601.61
Total	134,390.77	120,666.91	91,574.15	91,574.15	91,276.54	163,781.14

RECAPITULATION.

Balances November 29, 1897	$134,390.77
Receipts during quarter	120,666.91
Total to be accounted for	255,057.68
Payments during quarter	91,276.54
Balances March 5, 1898	163,781.14

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$14,266.77
Bank of Commerce, Albuquerque	2,226.84
First National Bank of Las Vegas	29,503.89
First National Bank of Albuquerque	29,490.28
Taos County Bank	9,734.07
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	29,476.70
First National Bank of Raton	14,772.47
The Bank of Roswell	14,641.71
National Bank of Commerce of New York	18,085.13
Total	163,781.14
Funds not available	1,583.28
Funds available	162,197.86
Deduct interest due	18,085.13
Free cash balance	144,112.73

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Quarterly statement of the Territorial treasurer of New Mexico, first quarter of the forty-ninth fiscal year, beginning March 7, 1898, and ending May 28, 1898.

Title of fund or account.	Balances Mar. 7, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances May 28, 1898.
Interest fund	$12,504.37		$5,187.26		$12,500.00	$5,191.63
Licenses		$3.07				3.07
Penitentiary current expense fund	15,894.51	1,901.49	3,414.71		6,591.60	14,619.11
Salary fund	14,456.78	2,241.10	2,886.95		8,284.05	11,300.78
Court fund	477.95		96.12		92.00	482.07
Miscellaneous fund	20,390.50		4,021.81		10,186.94	14,225.37
Compensation of assessors fund	1,536.12	1,046.35			1,528.52	1,053.95
Transportation of convicts	1,784.59		413.88		1,774.44	424.03
University of New Mexico	3,071.23		719.11		3,000.00	790.34
Agricultural college	2,019.81		479.40		2,019.81	479.40
New Mexico School of Mines	1,120.94		479.40		1,000.00	600.34
New Mexico Insane Asylum	3,509.52		1,600.32		3,509.52	1,600.32
Cattle indemnity fund	3,088.80	2,223.49			4,470.99	841.30
Interest on deposits	2,147.86	822.80			500.00	2,470.66
Deficit fund, forty-second fiscal year	154.60					154.60
Deficiency fund, forty-sixth fiscal year	3.00				3.00	
Special court fund	1,247.61					1,247.61
Normal school, New Mexico (Silver City)	1,044.20		479.40		1,044.20	479.40
Normal school, New Mexico (Las Vegas)	2,383.06		479.40		2,383.06	479.40
Territorial purposes, forty-seventh fiscal year		1,048.31		$1,048.31		
Territorial institutions, forty-seventh fiscal year		305.47		305.47		
New Mexico Military Institute	2,417.91		479.40		2,400.00	497.31
Territorial purposes, forty-eighth fiscal year		2,900.57		2,900.57		
Territorial institutions, forty-eighth fiscal year		846.21		846.21		
Capitol rebuilding fund	58,351.29				5,027.29	53,324.00
Corporation fund	207.60	1,021.00			588.16	640.44
The legal expense fund	227.75					227.75
Territorial purposes, forty-ninth fiscal year		12,071.85		12,071.85		
Territorial institutions, forty-ninth fiscal year		3,564.75		3,564.75		
Capitol contingent sinking fund	4,520.42	856.72				5,377.14
Special tax	10,619.11	2,139.63			9,377.64	3,381.10
Sheep sanitary fund	601.61	264.10				865.71
Compilation fund		161.50				161.50
Total	163,781.14	33,418.41	20,737.16	20,737.16	76,281.22	120,918.33

RECAPITULATION.

Balances March 7, 1898	$163,781.14
Receipts during quarter	33,418.41
Total to be accounted for	197,199.55
Payments during quarter	76,281.22
Balances May 28, 1898	120,918.33

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$1,886.47
Bank of Commerce, Albuquerque	2,243.38
First National Bank of Las Vegas	20,683.20
First National Bank of Albuquerque	20,670.95
Taos County Bank	7,100.09
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	20,659.45
First National Bank of Raton	10,070.94
The Bank of Roswell	10,040.75
National Bank of Commerce of New York	25,979.82
Total	120,918.33
Funds not available	1,583.28
Funds available	119,335.05
Deduct interest due	25,979.82
Free cash balance	93,355.23

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Quarterly statement of the Territorial treasurer of New Mexico, second quarter of the forty-ninth fiscal year, beginning May 30, 1898, and ending September 3, 1898.

Title of fund or account.	Balances May 30, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Sept. 3, 1898.
Interest fund	$5,191.63	$12,500.00	$19,113.48		$36,510.00	$295.11
Licenses	3.07				2.00	1.07
Penitentiary current expense fund	14,619.11	1,410.80	12,194.46		17,845.56	10,378.81
Salary fund	11,300.78	2,073.25	10,592.30		9,534.03	14,432.30
Court fund	482.07		349.89		103.00	728.96
Miscellaneous fund	14,225.37		14,550.44		14,326.79	14,449.02
Compensation of assessors fund	1,053.95	3,870.14			3,220.08	1,704.01
Transportation of convicts	424.03		1,514.67		1,440.16	498.54
University of New Mexico	790.34		2,475.48		790.00	2,475.82
Agriculture College	479.40		1,650.31		479.40	1,650.31
New Mexico School of Mines	600.34		1,650.31		600.00	1,650.65
New Mexico Insane Asylum	1,600.32		6,005.94		5,258.85	2,347.41
Cattle indemnity fund	841.30	5,429.29			3,922.75	2,347.84
Interests on deposits	2,470.66	550.84			254.16	2,767.34
Deficit fund, forty-second fiscal year	154.60					154.60
Special court fund	1,247.61					1,247.61
Normal School, New Mexico (Silver City)	479.40		1,650.31		479.40	1,650.31
Normal School, New Mexico (Las Vegas)	479.40		1,650.31		479.40	1,650.31
Territorial purposes, forty-seventh fiscal year		1,135.87		$1,135.87		
Territorial institutions, forty-seventh fiscal year		332.39		332.39		
New Mexico Military Institute	497.31		1,650.31			2,147.62
Territorial purposes, forty-eighth fiscal year		2,464.78		2,464.78		
Territorial institutions, forty-eighth fiscal year		733.43		733.43		
Capitol rebuilding fund	53,324.00	69.58			13,753.25	39,640.33
Corporation fund	640.44	653.00		1,292.44	1.00	
The legal expense fund	227.75					227.75
Territorial purposes, forty-ninth fiscal year		53,422.15	1,292.44	54,714.59		
Territorial institutions, forty-ninth fiscal year		15,667.15		15,667.15		
Capitol contingent sinking fund	5,377.14	3,773.90				9,151.04
Special tax	3,381.10	9,542.19			1,389.99	11,533.30
Sheep sanitary fund	865.71	430.25			865.00	430.96
Compilation fund	161.50	1,309.00			1,000.00	470.50
United States annual appropriation for agriculture college		24,000.00			24,000.00	
Total	120,918.33	139,368.01	76,340.65	76,340.65	136,254.82	124,031.52

RECAPITULATION.

Balances May 30, 1898	$120,918.33
Receipts during quarter	139,368.01
Total to be accounted for	260,286.34
Payments during quarter	136,254.82
Balances September 3, 1898	124,031.52

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$605.28
Bank of Commerce, Albuquerque	2,280.61
First National Bank of Las Vegas	23,564.10
First National Bank of Albuquerque	23,564.52
Taos County Bank	8,546.07
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	23,564.50
First National Bank of Raton	11,540.33
The Bank of Roswell	11,509.67
National Bank of Commerce of New York	17,293.16
Total	124,031.52
Funds not available	1,583.28
Funds available	122,448.24
Deduct interest due	17,293.16
Free cash balance	105,155.08

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Quarterly statement of the Territorial treasurer of New Mexico, third quarter of the forty-ninth fiscal year, beginning September 5, 1898, and ending December 3, 1898.

Title of fund or account.	Balances Sept. 5, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Dec. 3, 1898.
Interest fund	$295.11	$15,500.00	$4,464.84		$20,255.00	$4.95
Licenses	1.07	9.20				10.27
Penitentiary current expense fund	10,378.81	1,749.72	2,900.35		7,715.66	7,313.22
Salary fund	14,432.30	1,280.20	2,485.94		9,645.41	8,553.03
Court fund	728.96		82.39		372.95	438.40
Miscellaneous fund	14,449.02		3,442.25		9,006.76	8,884.51
Compensation of assessors fund	1,704.01	835.30			1,193.29	1,346.02
Transportation of convicts	498.54		356.36		493.74	361.16
University of New Mexico	2,475.82		605.16		2,400.00	680.98
Agriculture College	1,650.31		403.44		1,650.31	403.44
New Mexico School of Mines	1,650.65		403.44		1,250.00	804.09
New Mexico Insane Asylum	2,347.41		1,375.49		2,347.41	1,375.49
Cattle indemnity fund	2,347.84	2,270.77			4,272.06	346.55
Interests on deposits	2,767.34	575.52			122.60	3,220.26
Deficit fund forty-second fiscal year	154.60					154.60
Special court fund	1,247.61					1,247.61
Normal School, New Mexico (Silver City)	1,650.31		403.44		1,650.31	403.44
Normal School, New Mexico (Las Vegas)	1,650.31		403.44		1,650.31	403.44
Territorial purposes, forty-seventh fiscal year		962.69		$962.69		
Territorial institutions, forty-seventh fiscal year		280.62		280.62		
New Mexico Military Institute	2,147.62		403.44		2,100.00	451.06
Territorial purposes, forty-eighth fiscal year		1,785.82		1,785.82		
Territorial institutions, forty-eighth fiscal year		520.88		520.88		
Capitol rebuilding fund	39,640.33				12,317.40	27,322.93
The legal expense fund	227.75				227.75	
Territorial purposes, forty-ninth fiscal year		10,983.62		10,983.62		
Territorial institutions, forty-ninth fiscal year		3,196.35		3,196.35		
Capitol contingent sinking fund	9,151.04	898.25				10,049.29
Special tax	11,533.30	2,204.66			10,995.61	2,742.35
Sheep sanitary fund	430.96	218.14				649.10
Compilation fund	470.50	408.00			836.00	42.50
Territorial purposes, fiftieth fiscal year		1,477.72				1,477.72
Terrritorial institutions, fiftieth fiscal year		436.17				436.17
Total	124,031.52	45,593.63	17,729.98	17,729.98	90,502.57	79,122.58

RECAPITULATION.

Balances September 5, 1898	$124,031.52
Receipts during quarter	45,593.63
Total to be accounted for	169,625.15
Payments during quarter	90,502.57
Balances December 3, 1898	79,122.58

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$992.81
Bank of Commerce, Albuquerque	2,277.96
First National Bank of Las Vegas	14,087.00
First National Bank of Albuquerque	25,096.89
Taos County Bank	5,088.42
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	14,085.75
First National Bank of Raton	7,047.35
The Bank of Roswell	7,048.41
National Bank of Commerce of New York	1,874.71
Total	79,122.58
Funds not available	1,583.28
Funds available	77,539.30
Deduct interest due	1,874.71
Free cash balance	75,664.59

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Quarterly statement of the Territorial treasurer of New Mexico, fourth quarter of the forty-ninth fiscal year, beginning December 5, 1898, and ending March 4, 1899.

Title of fund or account.	Balances Dec. 5, 1898.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Mar. 4, 1899.
Interest fund	$4.95		$2,989.79			$2,994.74
Licenses	10.27	$88.49			$75.00	23.76
Penitentiary current expense fund	7,313.22	1,051.21	1,957.06		7,170.83	3,150.66
Salary fund	8,553.03	1,671.70	1,669.49		8,691.81	3,202.41
Court fund	438.40		55.38		237.45	256.33
Miscellaneous fund	8,884.51		2,319.47		6,951.78	4,252.20
Compensation of assessors fund	1,346.02	4,902.15			3,909.29	2,338.88
Transportation of convicts	361.16		239.66		329.22	271.60
University of New Mexico	680.98		3,212.69		2,130.00	1,763.67
Agriculture College	403.44		2,141.79		1,379.05	1,166.18
New Mexico School of Mines	804.09		2,141.79		1,750.00	1,195.88
New Mexico Insane Asylum	1,375.49		7,906.24		5,034.02	4,247.71
Cattle indemnity fund	346.55	7,763.42			4,808.91	3,301.06
Interests on deposits	3,220.26	518.21			3,570.29	168.18
Deficit fund, forty-second fiscal year	154.60					154.60
Special court fund	1,247.61					1,247.61
Normal School, New Mexico (Silver City)	403.44		2,141.79		1,379.05	1,166.18
Normal School, New Mexico (Las Vegas)	403.44		2,141.79		1,379.05	1,166.18
Territorial purposes, forty-seventh fiscal year		934.07		$934.07		
Territorial institutions, forty-seventh fiscal year		271.87		271.87		
New Mexico Military Institute	451.06		2,141.79		400.00	2,192.85
Territorial purposes, forty-eighth fiscal year		1,573.76		1,573.76		
Territorial institutions, forty-eighth fiscal year		459.83		459.83		
Capitol rebuilding fund	27,322.93				8,679.81	18,643.12
Territorial purposes, forty-ninth fiscal year		6,723.02		6,723.02		
Territorial institutions, forty-ninth fiscal year		1,918.55		1,918.55		
Capitol contingent sinking fund	10,049.29	5,014.55				15,063.84
Special tax	2,742.35	12,542.71			1,412.66	13,872.40
Sheep sanitary fund	649.10	640.51			998.47	291.14
Compilation fund	42.50	263.50			212.50	93.50
Territorial purposes, fiftieth fiscal year	1,477.72	60,766.92			6,695.05	55,549.59
Territorial institutions, fiftieth fiscal year	436.17	18,741.46		19,177.63		
Total	79,122.58	125,845.93	31,058.73	31,058.73	67,194.24	137,774.27

RECAPITULATION.

Balances December 5, 1898	$79,122.58
Receipts during quarter	125,845.93
Total to be accounted for	204,968.51
Payments during quarter	67,194.24
Balances March 4, 1899	137,774.27

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$8,156.35
Bank of Commerce, Albuquerque	2,295.42
First National Bank of Las Vegas	20,185.00
First National Bank of Albuquerque	25,807.58
Taos County Bank	8,077.10
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	20,182.50
First National Bank of Raton	12,102.16
The Bank of Roswell	12,101.80
National Bank of Commerce of New York	26,907.14
Western National Bank of New York	375.94
Total	137,774.27
Funds not available	1,583.28
Funds available	136,190.99
Deduct interest due	27,283.08
Free cash balance	108,907.91

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Quarterly statement of the Territorial treasurer of New Mexico, first quarter of the fiftieth fiscal year, beginning March 6, 1899, and ending June 3, 1899.

Title of fund or account.	Balances Mar. 6, 1899.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances June 3, 1899.
Interest fund	$2,994.74		$30,658.47		$33,653.21	
Licenses	23.76				23.76	
Penitentiary current expense fund	3,150.66	$1,250.31	14,824.47		11,916.02	$7,309.42
Salary fund	3,202.41	1,280.95	14,294.83		7,050.57	11,727.62
Court fund	256.33		231.74		130.52	357.55
Miscellaneous fund	4,252.20		15,178.23		8,421.94	11,008.49
Compensation of assessors fund	2,338.88	1,662.89			2,695.39	1,306.38
Transportation of convicts	271.60			$13.79	257.81	
University of New Mexico	1,763.67		961.36		1,750.00	975.03
Agriculture College	1,166.18		640.90		1,166.18	640.90
New Mexico School of Mines	1,195.88		640.90		1,195.88	640.90
New Mexico Insane Asylum	4,247.71		2,403.39		4,247.71	2,403.39
Cattle indemnity fund	3,301.06	872.65			3,307.06	866.65
Interests on deposits	168.18	673.66			274.96	566.88
Deficit fund, forty-second fiscal year	154.60					154.60
Special court fund	1,247.61				1.90	1,245.71
Normal School, New Mexico (Silver City)	1,166.18		640.90		1,166.18	640.90
Normal School, New Mexico (Las Vegas)	1,166.18		640.90		1,166.18	640.90
Territorial purposes, forty-seventh fiscal year		553.04		553.04		
Territorial institutions, forty-seventh fiscal year		162.19		162.19		
New Mexico Military Institute	2,192.85		640.90		2,100.00	733.75
Territorial purposes, forty-eighth fiscal year		561.01		208.30	352.71	
Territorial institutions, forty-eighth fiscal year		163.71		163.71		
Capitol rebuilding fund	18,643.12				9,608.41	9,034.71
Territorial purposes, forty-ninth fiscal year		1,994.07		1,994.07		
Territorial institutions, forty-ninth fiscal year		453.19		453.19		
Capitol contingent sinking fund	15,083.84	1,520.32				16,584.16
Special tax	13,872.40	3,806.30			12,767.05	4,911.65
Sheep sanitary fund	291.14	374.95				666.09
Compilation fund	93.50	68.00			102.00	59.50
Territorial purposes, fiftieth fiscal year	55,549.59	22,857.65	2,755.41	75,173.95	5,988.70	
Territorial institutions, fiftieth fiscal year		5,790.16	779.09	6,569.25		
Total	137,774.27	44,045.05	85,291.49	85,291.49	109,344.14	72,475.18

RECAPITULATION.

Balances March 6, 1899	$137,774.27
Receipts during quarter	44,045.05
Total to be accounted for	181,819.32
Payments during quarter	109,344.14
Balances June 3, 1899	72,475.18

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$5,950.31
Bank of Commerce, Albuquerque	2,312.86
First National Bank of Las Vegas	11,000.00
First National Bank of Albuquerque	11,000.00
Taos County Bank	4,130.39
New Mexico Savings Bank and Trust Company	1,583.28
San Miguel National Bank	11,000.00
First National Bank of Raton	5,500.00
The Bank of Roswell	5,500.00
National Bank of Commerce of New York	10,626.55
Cash items	3,871.79
Total	72,475.18
Funds not available	1,583.28
Funds available	70,891.90
Deduct interest due	14,498.34
Free cash balance	56,393.56

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Quarterly statement of the Territorial treasurer of New Mexico, second quarter of the fiftieth fiscal year, beginning June 4, 1899, and ending September 2, 1899.

Title of fund or account.	Balances June 4, 1899.	Receipts during quarter.	Transfers to funds.	Transfers from funds.	Payments during quarter.	Balances Sept. 2, 1899.
Miscellaneous fund:						
Forty-second fiscal year	$56.00					$56.00
Forty-third fiscal year	37.50					37.50
Forty-seventh fiscal year	5.00					5.00
Fiftieth fiscal year	10,909.99		$16,712.99		$13,129.96	4,492.02
Compensation of assessors' fund:						
Forty-second fiscal year	7.85					7.85
Fiftieth fiscal year	1,206.53	$5,300.32			3,336.21	3,272.64
Deficit fund forty-second fiscal year	154.60					154.60
Deficiency fund fiftieth fiscal year		2,475.00			10.00	2,465.00
Interest fund		11,008.65	26,274.03		40,688.95	33,593.73
Proceeds 37 certificates of indebtedness		37,000.00				
Interests on deposits	566.88	522.73			134.75	954.86
University of New Mexico	975.03		3,167.69		2,731.13	1,411.59
Agricultural college	640.90		2,111.79		640.90	2,111.79
New Mexico School of Mines	640.90		2,111.79		640.90	2,111.79
New Mexico Insane Asylum	2,403.39		7,919.24		6,793.64	3,528.99
New Mexico Military Institute	733.75		2,111.79		1,900.00	945.54
Normal School, New Mexico, (Silver City)	640.90		2,111.79		640.90	2,111.79
Normal School, New Mexico, (Las Vegas)	640.90		2,111.79		1,811.63	941.06
Penitentiary current expense fund:						
Forty-seventh fiscal year		768.97			68.50	700.47
Fiftieth fiscal year	7,309.42		16,336.58		10,258.39	15,051.74
Convicts' earnings		859.38				
Support United States prisoners		804.75				
Territorial purposes, forty-seventh fiscal year		1,600.76		$1,600.76		
Territorial purposes, fiftieth fiscal year		76,349.87	1,600.76	75,283.77		2,666.86
Sheep sanitary fund	666.09	811.37			1,400.00	77.46
Cattle indemnity fund	866.65	5,698.28			2,892.38	3,672.55
Capitol rebuilding fund	9,034.71				12,354.04	57,473.17
Proceeds 60 bonds		60,792.50				
Territorial institutions, forty-seventh fiscal year		468.70		468.70		
Territorial institutions, fiftieth fiscal year		21,980.14	468.70	21,645.88		802.96
Capitol contingent sinking fund	16,584.16	5,330.49				21,914.65
Special tax	4,911.65	13,452.06			14,861.82	3,501.89
Compilation fund	59.50	51.00				110.50
Salary fund	11,727.62	1,625.85	15,734.31		9,676.81	19,410.97
Supreme court fund	357.55		225.86		88.90	494.51
Special court fund	1,245.71					1,245.71
Total	72,475.18	246,900.82	98,999.11	98,999.11	124,049.81	195,326.19

RECAPITULATION.

Balances June 3, 1899	$72,475.18
Receipts during quarter	246,900.82
Total to be accounted for	319,376.00
Payments during quarter	124,049.81
Balances September 2, 1899	195,326.19

DISPOSITION OF FUNDS.

First National Bank of Santa Fe	$44,522.93
Bank of Commerce, Albuquerque	2,330.24
First National Bank of Las Vegas	29,937.11
First National Bank of Albuquerque	29,923.28
Taos County Bank	9,914.55
New Mexico Savings Bank and Trust Company	1,583.28
First National Bank of Raton	14,953.07
The Bank of Roswell	14,940.13
National Bank of Commerce of New York	17,260.60
San Miguel National Bank, Las Vegas	29,961.00
Total	195,326.19
Funds not available	1,583.28
Funds available	193,742.91
Deduct interest due	28,260.60
Free cash balance	165,482.31

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Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the fourth quarter of the forty-eighth fiscal year, ending March 5, 1898.

RECEIPTS.

Alejandro Sandoval, collector Bernalillo County	$19,106.28
C. W. Haynes, collector Chaves County	7,323.50
Hugh Smith, collector Colfax County	7,539.75
Jacob Schaublin, collector Donna Ana County	9,442.87
M. C. Stewart, collector Eddy County	4,784.66
John L. Burnsite, collector Grant County	13,148.66
Placido Baca y Baca, collector Guadaloupe County	1,355.24
Emil Fritz, collector Lincoln County	6,298.36
Frank A. Vigil, collector Mora County	2,703.04
W. G. Sargent, collector Rio Arriba County	2,540.15
John W. Brown, collector San Juan County	1,458.19
Fred Muller, collector Santa Fe County	5,365.85
Felix Martinez, collector San Miguel County	108.91
Tranquilino Labadie, collector San Miguel County	8,479.37
August Reingardt, collector Sierra County	4,959.84
M. Cooney, collector Socorro County	8,576.10
Silviano Lucero, collector Taos County	1,881.85
Emiterio Gallegos, collector Union County	1,877.73
Solomon Luna, collector Valencia County	3,433.76
E. H. Bergmann, superintendent New Mexico Penitentiary	2,397.30
C. H. Gildersleeve, clerk first judicial district	337.20
O. N. Marron, clerk second judicial district	468.65
H. P. Owen, clerk second judicial district	92.90
W. B. Walton, clerk third judicial district	210.15
Felix Martinez, clerk fourth judicial district	490.35
W. M. Driscoll, clerk fifth judicial district	626.99
J. A. La Rue, secretary cattle sanitary board	4,000.00
George H. Wallace, secretary of the Territory of New Mexico, corporation filing fees	769.00
J. B. Lamy, by order of the court	100.95
Blanche Boyle, by order of the court	19.50
Total	119,897.10

ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Expenditures.
Licenses	$60.17	$133.28
Penitentiary fund	2,397.30	8,030.73
Salary fund	2,226.24	7,918.65
Assessors fund	4,607.55	4,016.48
Miscellaneous		7,853.46
Transportation of convicts		357.67
Territorial institutions, viz:		
University of New Mexico		750.00
New Mexico Insane Asylum		9,475.82
New Mexico School of Mines		1,280.00
Agricultural college		2,148.07
Normal school, Silver City		1,338.86
Territorial purposes, forty-seventh fiscal year	1,998.67	
Territorial institutions, forty-seventh fiscal year	583.66	
Territorial purposes, forty-eighth fiscal year	6,110.67	
Territorial institutions, forty-eighth fiscal year	1,786.23	
Territorial purposes, forty-ninth fiscal year	60,200.60	
Territorial institutions, forty-ninth fiscal year	17,746.46	
Cattle indemnity	5,826.64	
School fund		28.34
Supreme court fund		58.80
Deficiency fund		22.48
Capitol rebuilding fund		3,371.29
Corporations fund	769.00	659.00
Capitol contingent sinking fund	4,479.90	
Special tax fund	10,517.78	
Sheep sanitary fund	586.23	
Total	119,897.10	47,442.93

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Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the first quarter of the forty-ninth fiscal year ending May 28, 1898.

RECEIPTS.

Alejandro Sandoval, collector Bernalillo County	$4,351.83
C. W. Haynes, collector Chaves County	606.65
Hugh Smith, collector Colfax County	4,435.29
Jacob Schaublin, collector Donna Ana County	1,361.69
M. C. Stewart, collector Eddy County	611.46
John L. Burnside, collector Grant County	2,749.36
Placido Baca y Baca, collector Guadaloupe County	247.26
Emil Fritz, collector Lincoln County	468.42
Frank A. Vigil, collector Mora County	646.45
W. G. Sargent, collector Rio Arriba County	109.68
John W. Brown, collector San Juan County	816.84
Fritz Muller, collector Santa Fe County	1,785.94
Tranquillino Labadie, collector San Miguel County	2,232.23
August Reingardt, collector Sierra County	558.15
M. Cooney, collector Socorro County	2,525.91
Silviano Lucero, collector Taos County	250.27
Emiterio Gallegos, collector Union County	1,207.24
Solomon Luna, collector Valencia County	213.88
C. H. Gildersleeve, clerk first judicial district, from January 1 to February 11, 1898	196.05
A. M. Bergere, clerk first judicial district, from February 12 to March 31, 1898	181.41
H. P. Owen, clerk second judicial district, for the quarter ending March 31, 1898	524.59
W. B. Walton, clerk third judicial district, for the quarter ending March 31, 1898	223.40
Felix Martinez, clerk fourth judicial district, for January and February 1898	228.20
Secundino Romero, clerk fourth judicial district, for the month of March, 1898	183.85
W. M. Driscoll, clerk fifth judicial district, for the quarter ending March 31, 1898	703.60
E. H. Bergmann, superintendent New Mexico penitentiary	1,901.49
Pullman Palace Car Company	91.97
J. A. La Rue, secretary cattle sanitary board	2,000.00
George H. Wallace, secretary of the Territory of New Mexico	1,021.00
Sale of compiled laws	161.50
Total	32,595.61

ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Expenditures.
Licenses	$3.07	
Penitentiary fund	1,901.49	$6,517.05
Salary fund	2,241.10	8,262.45
Assessors' fund	1,046.35	1,528.52
Corporations' fund	1,021.00	569.35
Special tax fund	2,139.63	9,450.59
Capitol contingent sinking fund	856.72	
Sheep sanitary fund	284.10	
Territorial purposes, forty-seventh fiscal year	1,048.31	
Territorial institutions, forty-seventh fiscal year	305.47	
Territorial purposes, forty-eighth fiscal year	2,900.57	
Territorial institutions, forty-eighth fiscal year	846.21	
Territorial purposes, forty-ninth fiscal year	12,071.85	
Territorial institutions, forty-ninth fiscal year	3,564.75	
Cattle indemnity fund	2,223.49	
Compilation fund	161.50	
Miscellaneous fund		10,176.94
Transportation of convicts' fund		1,774.44
Supreme court fund		92.00
Capitol rebuilding fund		4,960.46

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ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER—continued.

	Receipts.	Expenditures.
Territorial institutions, viz:		
Agricultural college		$2,019.81
New Mexico Insane Asylum		3,509.52
New Mexico School of Mines		1,000.00
New Mexico Military Institute		2,400.00
University of New Mexico		3,000.00
Normal school, Las Vegas		2,383.06
Normal school, Silver City		1,044.20
Total	$32,595.61	58,688.30

Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the second quarter of the forty-ninth fiscal year ending September 3, 1898.

RECEIPTS.

Alejandro Sandoval, collector Bernalillo County	$12,942.51
C. W. Haynes, collector Chaves County	8,339.15
C. C. Perry, ex-collector Chaves County	330.85
Hugh Smith, collector Colfax County	8,741.98
Jacob Schaublin, collector Donna Ana County	9,922.36
M. C. Stewart, collector Eddy County	3,535.12
John L. Burnside, collector Grant County	8,924.32
Placido Baca y Baca, collector Guadaloupe County	1,238.47
Emil Fritz, collector Lincoln County	5,348.91
Frank A. Vigil, collector Mora County	3,014.79
W. G. Sargent, collector Rio Arriba County	2,678.94
Martin Lopez, ex-collector Rio Arriba County	70.80
John W. Brown, collector San Juan County	576.16
Fred Muller, collector Santa Fe County	4,904.60
Tranquillino Labadie, collector San Miguel County	6,597.67
August Reingardt, collector Sierra County	3,708.48
M. Cooney, collector Socorro County	6,576.98
Silviano Lucero, collector Taos County	503.45
Emiterio Gallegos, collector Union County	1,886.95
Solomon Luna, collector Valencia County	2,959.05
A. M. Bergere, clerk first judicial district	215.40
Harry P. Owen, clerk second judicial district	453.60
J. P. Mitchell, clerk third judicial district	601.20
Secundino Romero, clerk fourth judicial district	218.05
W. M. Driscoll, clerk fifth judicial district	585.00
E. H. Bergmann, superintendent New Mexico penitentiary	1,410.80
J. A. La Rue, secretary cattle sanitary board	4,000.00
Geo. H. Wallace, secretary of the Territory of New Mexico	653.00
A. Staab, secretary capitol rebuilding board	69.58
Compilation fund (sale of compiled laws)	1,309.00
Product of note due First National Bank of Santa Fe to pay interest	12,500.00
Total	114,817.17

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ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Expenditures.
Licenses		$2.00
Penitentiary fund	$1,410.80	17,992.84
Salary fund	2,073.25	9,534.03
Assessors' fund	3,870.14	3,135.88
Corporations' fund	653.00	1.00
Special tax fund	9,542.19	1,399.99
Compilation fund (from sale of compiled laws)	1,309.00	1,000.00
Capitol rebuilding fund	69.58	13,625.71
Capitol contingent sinking fund	3,773.90	
Sheep sanitary fund	430.25	
Territorial purposes, forty-seventh fiscal year	1,135.87	
Territorial institutions, forty-seventh fiscal year	332.39	
Territorial purposes, forty-eighth fiscal year	2,464.78	
Territorial institutions, forty-eighth fiscal year	733.43	
Territorial purposes, forty-ninth fiscal year	53,422.15	
Territorial institutions, forty-ninth fiscal year	15,667.15	
Cattle idemnity fund	5,429.29	
Miscellaneous fund		15,415.76
Transportation of convicts' fund		1,440.16
Supreme court fund		153.00
Territorial institutions fund, viz:		
Agricultural college		479.40
New Mexico Insane Asylum		5,258.85
New Mexico School of Mines		1,850.00
University of New Mexico		790.00
Normal School, Las Vegas		479.40
Normal School, Silver City		479.40
Due First National Bank of Santa Fe	12,500.00	
Total	114,817.17	73,037.42

Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the third quarter of the forty-ninth fiscal year, ending December 3, 1898.

RECEIPTS.

Alejandro Sandoval, collector Bernalillo County	$3,588.28
C. W. Haynes, collector Chaves County	1,712.88
Hugh Smith, collector Colfax County	1,249.27
Jacob Schaublin, collector Donna Ana County	638.96
M. C. Stewart, collector Eddy County	1,934.09
John L. Burnsite, collector Grant County	1,549.31
Placido Baca y Baca, collector Guadaloupe County	212.35
Emil Fritz, collector Lincoln County	515.90
George Sena, ex-collector Lincoln County	356.45
Frank A. Vigil, collector Mora County	145.53
John W. Brown, collector San Juan County	617.65
Fred Muller, collector Santa Fe County	1,041.36
Tranquilino Labadie, collector San Miguel County	1,887.80
August Reingardt, collector Sierra County	445.38
M. Cooney, collector Socorro County	2,426.67
Silviano Lucero, collector Taos County	791.68
Emiterio Gallegos, collector Union County	801.77
Solomon Luna, collector Valencia County	159.91
Frank Kropp, treasurer Donna Ana County	266.07
James Goode, deputy treasurer Union County	3,662.88
A. M. Bergere, clerk first judicial district	189.75
Harry P. Owen, clerk second judicial district	391.95
James P. Mitchell, clerk third judicial district	278.95
Secundino Romero, clerk fourth judicial district	188.70
John E. Griffith, clerk fifth judicial district	280.85
E. H. Bergmann, superintendent New Mexico Penitentiary	1,749.72
J. A. La Rue, secretary cattle sanitary board	2,000.00
George H. Wallace, secretary of the Territory	76.00
Sale of compiled laws, 1897	408.00
Product of note due the First National Bank of Albuquerque to pay interest	15,000.00
Product of note due First National Bank of Santa Fe to pay interest	500.00
Total	45,018.11

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ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Expenditures.
Licenses	$9.20	
Penitentiary current expense fund	1,749.72	$7,497.43
Salary fund	1,280.20	9,645.41
Assessors fund	835.30	1,177.52
Special tax fund	2,204.66	10,985.61
Legal expense fund		227.75
Compilation fund (from sale of compiled laws)	408.00	836.00
Capitol rebuilding fund		12,410.85
Capitol contingent sinking fund	898.25	
Sheep sanitary fund	218.14	
Interest on deposits fund		122.60
Territorial purposes, forty-seventh fiscal year	962.69	
Territorial institutions, forty-seventh fiscal year	280.62	
Territorial purposes, forty-eighth fiscal year	1,785.82	
Territorial institutions, forty-eighth fiscal year	520.88	
Territorial purposes, forty-ninth fiscal year	10,983.62	
Territorial institutions, forty-ninth fiscal year	3,196.35	
Territorial purposes, fiftieth fiscal year	1,477.72	
Territorial institutions, fiftieth fiscal year	436.17	
Cattle indemnity fund	2,270.77	
Miscellaneous fund		8,239.19
Transportation of convicts fund		493.74
Supreme court fund		312.95
Territorial institutions fund, viz:		
University of New Mexico		2,400.00
Agricultural college		1,650.31
New Mexico Insane Asylum		2,347.41
New Mexico Military Institute		2,100.00
Normal school, Silver City		1,650.31
Normal school, Las Vegas		1,650.31
Due First National Bank of Albuquerque	15,000.00	
Due First National Bank of Santa Fe	500.00	
Total	45,018.11	63,747.39

Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the fourth quarter of the forty-ninth fiscal year, ending March 4, 1899.

RECEIPTS.

Alejandro Sandoval, collector Bernalillo County	$5,080.80
J. L. Perea, treasurer and collector Bernalillo County	9,561.57
C. W. Haynes, collector Chaves County	4,121.25
J. A. Gilmore, treasurer and collector Chaves County	1,741.15
Hugh Smith, treasurer and collector Colfax County	11,778.65
A. E. Burnam, treasurer and collector Colfax County	706.17
Jacob Schaublin, collector Donna Ana County	7,918.95
M. C. Stewart, collector Eddy County	4,084.40
J. F. Matheson, treasurer and collector Eddy County	1,966.69
John L. Burnsite, treasurer and collector Grant County	17,037.04
Placido Baca y Baca, collector Guadaloupe County	86.74
Salome Martinez, treasurer and collector Guadaloupe County	969.68
Emil Fritz, collector Lincoln County	4,893.77
R. Michaels, treasurer and collector Lincoln County	649.04
Frank A. Vigil, collector Mora County	5,016.22
J. B. Martinez, treasurer and collector Mora County	335.51
W. G. Sargent, treasurer and collector Rio Arriba County	2,515.22
John W. Brown, collector San Juan County	672.80
Fred Muller, treasurer and collector Santa Fe County	5,438.51
Tranquilino Labadie, collector San Miguel County	636.15
Margarito Romero, treasurer and collector San Miguel County	6,053.01
August Reingardt, collector Sierra County	4,163.51
Will M. Robins, treasurer and collector Sierra County	4,617.08
M. Cooney, collector Socorro County	8,675.23
Abran Abeytia, treasurer and collector Socorro County	435.63
Silviano Lucero, collector Taos County	1,480.80
Donaciano Cordova, treasurer and collector Taos County	427.73
Emiterio Gallegos, collector Union County	1,993.88
Nepomuseno Martinez, treasurer and collector Union County	1,580.84

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Solomon Luna, treasurer and collector Valencia County	$2,835.59
Luis M. Ortiz, ex-collector Rio Arriba County, taxes, 1888	84.70
J. A. La Rue, secretary cattle sanitary board	4,500.00
George H. Wallace, secretary Territory of New Mexico	283.00
E. H. Bergmann, superintendent New Mexico Penitentiary	1,051.21
A. M. Bergere, clerk first judicial district	223.60
Harry P. Owen, clerk second judicial district	442.80
James P. Mitchell, clerk third judicial district	425.80
Secundino Romero, clerk fourth judicial district	187.45
John E. Griffith, clerk fifth judicial district	392.05
Sale of compiled laws	263.50
Total	125,327.72

ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Payments.
Licenses	$88.49	$75.00
Penitentiary current expense fund	1,051.21	7,175.83
Salary fund	1,671.70	8,691.81
Assessors fund	4,902.15	3,914.49
Special tax fund	12,542.71	1,407.66
Compilation fund (from sale of compiled laws)	263.50	212.50
Capitol rebuilding fund		8,608.09
Capitol contingent sinking fund	5,014.55	
Sheep sanitary fund	640.51	332.47
Interest on deposits fund		3,570.29
Territorial purposes, forty-seventh fiscal year	934.07	
Territorial institutions, forty-seventh fiscal year	271.87	
Territorial purposes, forty-eighth fiscal year	1,573.76	
Territorial institutions, forty-eighth fiscal year	459.83	
Territorial purposes, forty-ninth fiscal year	6,723.02	
Territorial institutions, forty-ninth fiscal year	1,918.55	
Territorial purposes, fiftieth fiscal year	60,766.92	6,695.05
Territorial institutions, fiftieth fiscal year	18,741.46	
Cattle indemnity fund	7,763.42	
Miscellaneous fund		6,930.38
Transportation of convicts fund		329.22
Supreme court fund		237.45
Territorial institutions fund:		
University of New Mexico		2,130.00
Agricultural college		1,379.05
New Mexico Insane Asylum		5,084.02
New Mexico School of Mines		1,750.00
New Mexico Military Institute		400.00
Normal school, Silver City		1,397.05
Normal school, Las Vegas		1,397.05
Total	125,327.72	61,667.41

NOTE.—The following appropriations made by the thirty-third legislative assembly were paid from the following funds, and the amounts are included on the column of expenditures above, to wit:

From interest on depoits for the payment of interpreters, translators, etc., as per C. J. R., No. 7	$2,957.75
From salary fund of the forty-sixth fiscal year	42.25
From Territorial purposes fund of the fiftieth fiscal year	1,000.00
From Territorial purposes, from pay of employees, translators, etc., C. J. R., No. 7	4,000.00
From Territorial purposes, fiftieth fiscal year, printing bills and in Spanish	1,695.05
Total	9,695.05

Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the first quarter of the fiftieth fiscal year, ending June 3, 1899.

RECEIPTS.

J. L. Perea, treasurer and collector Bernalillo County	$2,106.16
C. W. Haynes, collector Chaves County	3,070.05
J. A. Gilmore, treasurer and collector Chaves County	1,019.60
A. E. Burnam, treasurer and collector Colfax County	4,688.88
Jacob Schaublin, treasurer and collector Donna Ana County	1,902.34
J. D. Walker, collector Eddy County	2.83
J. F. Matheson, treasurer and collector Eddy County	1,016.36
John L. Burnside, treasurer and collector Grant County	2,308.19

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Placido Baca y Baca, collector Guadaloupe County	$864.26
Salome Martinez, treasurer and collector Guadaloupe County	357.04
R. Michaels, treasurer and collector Lincoln County	2,237.97
J. B. Martinez, treasurer and collector Mora County	227.58
W. G. Sargent, treasurer and collector Rio Arriba County	1,706.38
C. H. McHenry, treasurer and collector San Juan County	848.03
Fred Muller, treasurer and collector Santa Fe County	979.62
T. Labadie, collector San Miguel County	5,433.00
Margarito Romero, treasurer and collector San Miguel County	6,005.84
Will M. Robins, treasurer and collector Sierra County	471.73
Abran Abeytia, treasurer and collector Socorro County	858.90
Donaciano Cordova, treasurer and collector Taos County	408.89
Nepomuseno Martinez, treasurer and collector Union County	3,356.42
Solomon Luna, treasurer and collector Valencia County	134.00
E. H. Bergmann, superintendent New Mexico Penitentiary	1,250.31
A. M. Bergere, clerk first judicial district	169.95
H. P. Owen, clerk second judicial district	440.80
J. P. Mitchell, clerk third judicial district	212.00
Secundino Romero, clerk fourth judicial district	254.35
John E. Griffith, clerk fifth judicial district	203.85
Pullman Palace Car Company	71.05
George H. Wallace, secretary Territory, corporation fees	617.00
George H. Wallace, secretary Territory, unexpended balance (employees, 33d L. A)	80.00
Sale of Compiled Laws, 1897	68.00
Total	43,371.39

ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Payments.
License fund		$23.76
Penitentiary current-expense fund	$1,250.31	11,989.52
Salary fund	1,280.95	2,051.24
Assessors' fund	1,662.89	2,695.39
Special-tax fund	3,806.30	12,854.25
Compilation fund (from sale of Compiled Laws)	68.00	102.00
Capitol contingent sinking fund	1,520.32	
Capitol rebuilding fund		9,642.48
Sheep sanitary fund	374.95	
Territorial purposes, forty-seventh fiscal year	553.04	
Territorial institutions, forty-seventh fiscal year	162.19	
Territorial purposes, forty-eighth fiscal year	561.01	352.71
Territorial institutions, forty-eighth fiscal year	163.71	
Territorial purposes, forty-ninth fiscal year	1,994.07	
Territorial institutions, forty-ninth fiscal year	453.19	
Territorial purposes, fiftieth fiscal year	22,857.65	5,968.70
Territorial institutions, fiftieth fiscal year	5,790.16	
Cattle indemnity fund	872.65	
Miscellaneous fund		8,449.34
Transportation of convicts fund		257.81
Supreme court fund		130.52
Territorial institutions fund, viz:		
University of New Mexico		1,750.00
Agricultural college		1,166.18
New Mexico Insane Asylum		4,247.71
New Mexico School of Mines		1,195.88
New Mexico Military Institute		2,100.00
Normal school, Silver City		1,166.18
Normal school, Las Vegas		1,166.18
Total	43,371.39	67,309.85

NOTE.—The following appropriations made by the thirty-third legislative assembly were paid from the following funds, and the amounts are included in the column of expenditures above, to wit:

For Territorial purposes, forty-eighth fiscal year, for printing report of superintendent of public instruction in Spanish, H. J. R. No. 4	$352.71
For Territorial purposes, fiftieth fiscal year, for printing bills, etc., in Spanish, C. B. No. 9	1,199.40
Expenses of committee visiting Territorial institutions, H. J. R. No. 13	125.50
Pay of interpreters, translators, etc., C. J. R. No. 11	3,000.00
Printing reports, etc., in Spanish, H. J. R. No. 4	1,413.80
Pay for muster in and out rolls, C. B. No. 100	250.00
Total	6,341.41

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Quarterly report of the auditor of public accounts of the Territory of New Mexico, giving a detailed statement of the receipts and expenditures during the second quarter of the fiftieth fiscal year, ending September 5, 1899.

RECEIPTS.

J. L. Perea, treasurer and collector Bernalillo County	$16,242.86
J. A. Gilmore, treasurer and collector Chaves County	12,168.06
A. E. Burnam, treasurer and collector Colfax County	7,003.13
Jacob Schaublin, treasurer and collector Donna Ana County	9,819.99
J. F. Matheson, treasurer and collector Eddy County	6,870.72
John L. Burnside, treasurer and collector Grant County	20,132.71
Salome Martinez, treasurer and collector Guadaloupe County	1,850.09
R. Michaels, treasurer and collector Lincoln County	5,955.20
J. B. Martinez, treasurer and collector Mora County	2,582.17
W. G. Sargent, treasurer and collector Rio Arriba County	2,042.55
C. H. McHenry, treasurer and collector San Juan County	1,373.67
Fred Muller, treasurer and collector Santa Fe County	8,697.64
Margarito Romero, treasurer and collector San Miguel County	9,015.58
Wm. M. Robins, treasurer and collector Sierra County	1,684.88
Abran Abeytia, treasurer and collector Socorro County	8,582.91
Donaciano Cordova, treasurer and collector Taos County	1,376.39
Nepomuseno Martinez, treasurer and collector Union County	8,171.81
Solomon Luna, treasurer and collector Valencia County	3,543.63
J. La Rue, secretary cattle sanitary board, fees	2,000.00
Geo. H. Wallace, secretary Territory, corporation fees	1,878.00
W. H. Whiteman, adjutant-general, refund interest fund	8.65
A. M. Bergere, clerk first judicial district, fees	192.85
Harry P. Owen, clerk second judicial district, fees	456.60
J. P. Mitchell, clerk third judicial district, fees	128.80
Secundino Romero, clerk fourth judicial district, fees	522.35
J. E. Griffith, clerk fifth judicial district, fees	325.25
H. O. Bursum, superintendent New Mexico Penitentiary	1,664.13
E. H. Bergmann, ex-superintendent New Mexico Penitentiary	768.97
Sale of Compiled Laws, 1897	51.00
Sale of capitol rebuilding bonds, second series	60,792.50
Sale of certificates of indebtedness, Series A	39,475.00
Product of note First National Bank of Santa Fe, to pay interest	11,000.00
Total	246,378.09

ABSTRACT OF RECEIPTS AND EXPENDITURES DURING THE QUARTER.

	Receipts.	Payments.
Penitentiary current-expense fund	$2,433.10	$11,415.23
Salary fund	1,625.85	9,676.81
Assessors' fund	5,300.32	3,323.01
Special-tax fund	13,452.06	14,900.42
Compilation fund (from sale of Compiled Laws)	51.00	.....
Capitol contingent sinking fund	5,330.49	.....
Capitol rebuilding fund	60,792.50	12,315.63
Sheep sanitary fund	811.37	1,400.00
Cattle indemnity fund	5,698.28	.....
Miscellaneous fund	.....	13,103.56
Supreme court fund	.....	88.90
Territorial purposes, forty-seventh fiscal year	1,600.76	.....
Territorial institutions, forty-seventh fiscal year	468.70	.....
Territorial purposes, fiftieth fiscal year	76,349.87	.....
Territorial institutions, fiftieth fiscal year	21,980.14	.....
Interest on deposits fund	.....	134.75
Deficiency fund	.....	10.00
Territorial institutions fund, viz:		
University of New Mexico	.....	2,731.13
Agricultural college	.....	640.90
New Mexico Insane Asylum	.....	6,798.64
New Mexico School of Mines	.....	640.90
New Mexico Military Institute	.....	1,900.00
Normal institute, Silver City	.....	640.90
Normal school, Las Vegas	.....	1,811.63
Due First National Bank of Santa Fe	11,000.00	.....
Paid by W. H. Whiteman, adjutant-general	8.65	.....
Certificates of indebtedness, sale	39,475.00	.....
Total	246,378.09	81,527.41

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FINANCIAL STATEMENT OF BERNALILLO COUNTY.

Total bonded indebtedness of the county of Bernalillo up to and including June 30, 1899, amounts to $362,587.33, composed of the following items:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Jan. 1, 1885	10-20	Funding bonds	6	$22,500.00
Jan. 1, 1886	10-30	Court-house building	7	78,000.00
July 1, 1889	10-30	Funding bonds	6	38,000.00
Do	10-30	Current expenses	6	40,000.00
Nov. 16, 1891	20-30	....do	6	7,000.00
July 1, 1892	20-30	Bridge building	6	30,000.00
Jan. 1, 1893	15-30	Current expenses	5.9	17,000.00
July 1, 1895	10-30	Funding bonds	6	64,900.00
Aug. 2, 1897	10-20	.....do	6	50,100.00
		Total bonded indebtedness		347,500.00
Approved accounts unpaid to June 30, 1899				15,087.33
Total indebtedness to June 30, 1899				362,587.33
Total assessed value of real and personal property for the year 1898				5,719,261.00

FINANCIAL STATEMENT OF CHAVES COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounts to $50,000, composed of the following amounts, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Jan. 1, 1891	10-20	Court-house and jail	6	$30,000
Do	10-20	Lincoln County indebtedness	6	13,000
Do	15-30	Current expenses	6	7,000
		Total bonded debt		50,000
Total assessed valuation, real and personal, for year 1898				1,907,049

FINANCIAL STATEMENT OF COLFAX COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounts to $70,400, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
July 1, 1897	10-30	Current expenses	6	$7,000
July 1, 1895	20-30	Funding debt	6	28,900
Aug. 1, 1897	20-30	.....do	6	18,500
July 1, 1898	20-30	Improvement bonds	6	16,000
		Total bonded debt		70,400
Total assessed value of real and personal property for the year 1898				2,818,050

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FINANCIAL STATEMENT OF DONNA ANA COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounts to $98,188.84, composed of the following amounts, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Jan. 1, 1885	10-20	Funding bonds	6	$9,400.00
July 1, 1889	10-20	do	6	32,000.00
July 1, 1896	10-20	do	6	23,100.00
Aug. 2, 1897	10-20	do	6	7,621.15
July 1, 1889	10-20	Current-expense bonds	6	15,000.00
July 1, 1891	10-20	do	6	7,000.00
		Total bonded debt		94,121.15
Judgments against the county				3,324.91
Approved accounts				589.92
Warrants outstanding				152.86
Total indebtedness				98,188.84
Void indebtedness under section 302, Complied Laws, 1897				10,584.85
Total assessed valuation, real and personal, for year 1898				2,435,753.00

FINANCIAL STATEMENT OF EDDY COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounts to $74,079.39.

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
			Per cent.	
Nov. 30, 1891	Feb. 6, 1921	County current expenses	6	$7,000.00
July 1, 1891	July 1, 1911	Court-house and jail	6	30,000.00
Jan. 1, 1892	Jan. 1, 1912	Lincoln County indebtedness	6	10,000.00
June 2, 1894	Jan. 6, 1924	Bridge bonds (county)	6	3,000.00
Aug. 2, 1897	July 1, 1917	Floating indebtedness bonds under act thirty-second legislative assembly	6	24,079.39
		Total bonded debt		74,079.39
Total assessed valuation of real and personal property, less exemptions				1,724,282.00

FINANCIAL STATEMENT OF GRANT COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounting to $270,585.03, composed of the following amounts, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
			Per cent.	
July 1, 1882	June 30, 1902	Funding indebtedness	6	$100.00
July 1, 1883	June 30, 1903	Railroad	7	57,000.00
July 1, 1885	June 30, 1905	Funding indebtedness	6	18,500.00
July 1, 1889	July 1, 1919	do	6	115,500.00
Do	do	Current expenses	6	27,000.00
		Total bonded debt		218,100.00
Approved accounts outstanding				15,824.51
Warrants outstanding				65.87
Judgments against county				18,016.65
Floating indebtedness				18,578.00
Total indebtedness				270,585.03
Total assessed valuation, real and personal, for year 1898				3,674,972.85

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FINANCIAL STATEMENT OF GUADALOUPE COUNTY.

Total amount of indebtedness of said county up to and including June 30, 1899, amounts to $30,478.88, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
January 1, 1893	20-30	Court-house and jail	6	$25,000.00
August 2, 1897	10-20	Funding indebtedness of current expenses	6	2,822.14
		Total bonded indebtedness		27,822.14
Judgments against county				1,250.13
Approved accounts outstanding 1898				1,200.74
Approved accounts outstanding 1899				196.85
Total indebtedness				30,478.86
Total amount of assessed value of real and personal property for the year 1898				700,257.00

FINANCIAL STATEMENT OF LINCOLN COUNTY.

Total indebtedness of the county of Lincoln up to and including June 30, 1899, amounts to $57,715, composed of the following amounts, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
October 3, 1892	20	Funding indebtedness	8	$3,000.00
January 1, 1883	20	do	8	500.00
June 2, 1883	20	do	8	300.00
April 7, 1885	30	do	6	2,000.00
July 1, 1889	15	do	6	24,366.00
July 1, 1894	20-30	Current expenses	6	7,000.00
August 2, 1897	20-30	Funding indebtedness	6	11,675.00
		Total bonded indebtedness		48,841.00
Approved accounts				4,379.32
Warrants outstanding				1,760.38
Account of George Sena				2,734.30
Total indebtedness				57,715.00
Total assessed valuation of real and personal property for the year 1898				1,608,226.00

FINANCIAL STATEMENT OF MORA COUNTY.

Total indebtedness of the county of Mora, up to and including June 30, 1899, amounts to $101,823.14, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
August 1, 1889	10-20	Court-house and jail	6	$70,000.00
August 2, 1897	10-20	Funding bonds	6	7,693.75
		Total bonded indebtedness		77,693.75
Approved accounts outstanding				1,314.49
Judgments against county unpaid				9,315.44
Interest due and unpaid				13,499.46
Total indebtedness to June 30, 1899				101,823.14
Total assessed value of real and personal property for the year 1898				1,016,120.00

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M'KINLEY COUNTY.

McKinley County was formed from a portion of the county of Bernalillo, by an act of the thirty-third legislative assembly of the Territory of New Mexico, which went into effect February 23, 1899.

The only indebtedness against the county at the date of June 30, 1899, was its portion or pro rata of the indebtedness of that (Bernalillo) county, and it is impossible to determine what the pro rata of indebtedness will be until the assessment of this county has been completed.

This county of McKinley will be organized in 1900.

OTERO COUNTY.

Otero County was formed from portions of Donna Ana, Socorro, and Lincoln counties, by an act of the thirty-third legislative assembly of the Territory of New Mexico, which went into effect February 1, 1899.

The only indebtedness against the county at date of June 30, 1899, was its portion or pro rata of the indebtedness of those counties, and it is impossible to determine what the pro rata of indebtedness will be until the assessment of this county has been completed.

FINANCIAL STATEMENT OF RIO ARRIBA COUNTY.

Total indebtedness of the county of Rio Arriba, up to and including June 30, 1899, amounts to $51,902.60, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
July 5, 1882	20-30	Funding bonds, current expenses of court-house, jail, and bridges	6	$45,749.00
		Total bonded indebtedness		45,749.00
Approved accounts outstanding				5,015.80
Warrants outstanding				1,137.80
Total indebtedness to June 30, 1899				51,902.60
Total assessed value of real and personal property for the year 1898				1,053,179.00

FINANCIAL STATEMENT OF SAN JUAN COUNTY.

Total indebtedness of said county up to and including June 30, 1899, amounting to $21,290.16, composed of the following amounts, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
			Per cent.	
December 30, 1889	Dec. 30, 1919	Current expense	6	$8,000.00
September 1, 1892	Sept. 1, 1922	Jail bonds	6	2,500.00
January 1, 1893	Jan. 1, 1923	Current expense	6	4,000.00
October 1, 1892	Oct. 1, 1922	Judgment	6	2,600.00
April 1, 1894	Apr. 1, 1923	Current expense	6	3,000.00
		Total bonded debt		20,100.00
Warrants outstanding				180.05
Floating indebtedness				1,010.11
Total indebtedness				21,290.16
Total assessed valuation, real and personal, for year 1898				873,258.00

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FINANCIAL STATEMENT OF SAN MIGUEL COUNTY.

Total indebtedness of San Miguel County, up to and including June 30, 1899 amounts to $496,886, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
July 1, 1882	10	Refunding	8	$3,300
July 1, 1884	10	Court-house and jail	6	26,500
July 1, 1889	10-30	Funded debt, 1889	6	213,300
Jan. 1, 1892	30	Court-house and jail bonds, 1892	6	18,000
Nov. 1, 1895	20-30	Funded debt, 1895	5½	113,300
July 1, 1897	10-20	Funded debt, 1897	6	13,879
		Total bonded indebtedness		388,279
Approved accounts outstanding, including floating debt				10,000
Judgments against county				23,107
Past due interest unpaid				75,500
Total indebtedness				496,886
Total assessed value of real and personal property for the year 1898				4,440,364

FINANCIAL STATEMENT OF SANTA FE COUNTY.

Total indebtedness of the county of Santa Fe, up to and including June 30, 1899 amounts to $874,256.42, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years		*Per cent.*	
July 1, 1882	10-20	Current expense	8	$14,600.00
Jan. 1, 1885	20-30	do	6	27,000.00
Jan. 10, 1890	20-30	do	6	6,300.00
Sept. 20, 1891	20-30	Railroad bonds	5	262,000.00
Aug. 1, 1891	20-30	Current expense	5	19,500.00
Mar. 1, 1892	20-30	Railroad bonds	5	178,600.00
Do	20-30	Court-house and jail	5	64,500.00
Do	20-30	Current expense	5	90,900.00
Jan. 1, 1893	20-30	do	5	3,500.00
Aug. 1, 1897	10-20	do	6	13,139.00
		Total bonded indebtedness		680,039.00
Outstanding warrants				2,790.00
Accounts filed and approved and certificates issued				2,850.00
Accounts due and approved				421.00
Past due interest unpaid				188,156.42
Total indebtedness to June 30, 1899				874,256.42
Total assessed value of real and personal property for the year 1898				1,768,150.68

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FINANCIAL STATEMENT OF SIERRA COUNTY.

Total indebtedness of the county of Sierra, up to and including June 30, 1899, amounts to $68,623, composed of the following items:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
July 1, 1889	15-30	Funding bonds	6	$56,800
Do	15-30	Current expense	6	10,000
		Total bonded indebtedness		66,800
Approved accounts unpaid to June 30, 1899				1,823
Total indebtedness to June 30, 1899				68,623
Total assessed value of real and personal property for the year 1898				1,344,495

FINANCIAL STATEMENT OF SOCORRO COUNTY.

Total indebtedness of the county of Socorro, up to and including June 30, 1899, amounts to $180,335.66, composed of the following items, viz:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Jan. 1, 1884	10-20	Court-house and jail and funding debt	6	$103,500.00
July 1, 1889	10-20	Bridges and improvement	6	54,700.00
July 1, 1897	10-20	Funding bonds	6	20,700.00
		Total bonded indebtedness		178,900.00
Approved accounts outstanding				1,435.66
Total indebtedness to June 30, 1899				180,335.66
Total assessed value of real and personal property for the year 1898				4,611,482.00

FINANCIAL STATEMENT OF TAOS COUNTY.

Total indebtedness of the county of Taos, up to and including June 30, 1899, amounts to $44,900, composed of the following items:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest	Amount.
	Years.		*Per cent.*	
June 6, 1889	10-30	Funding bonds	6	$24,500
July 2, 1889	10-30	Current expense	6	3,000
July 1, 1892	15-30	....do	6	3,500
Aug. 2, 1897	10-20	Funding bonds	6	10,400
		Total bonded indebtedness		41,400
Approved accounts outstanding to June 30, 1899				3,500
Total indebtedness to June 30, 1899				44,900
Total assessed value of real and personal property for the year 1898				611,816

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FINANCIAL STATEMENT OF UNION COUNTY.

Total indebtedness of the county of Union, up to and including June 30, 1899, amounts to $36,631.67, composd of the following items:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Nov. 1, 1894	10-20	Court-house and jail	6	$20,000.00
Jan. 15, 1895	15-30	Current expense	6	7,000.00
		Total bonded indebtedness		27,000.00
Judgments against county				3,068.67
Interest due and unpaid				1,563.00
Outstanding indebtedness				5,000.00
Total indebtedness to June 30, 1899				36,631.67
Total assessed value of real and personal property for the year 1898				1,631,500.00

FINANCIAL STATEMENT OF VALENCIA COUNTY.

Total indebtedness of the county of Valencia, up to and including June 30, 1899, amounts to $106,982, composed of the following items:

Bonded debt.

Date of issue.	Date of maturity.	For what purpose issued.	Rate of interest.	Amount.
	Years.		*Per cent.*	
Jan. 1, 1882	10-20	Floating debt	8	$18,982.00
Jan. 1, 1885	10-20	....do	6	8,800.00
Jan. 1, 1889	10-20	....do	6	18,700.00
Aug. 1, 1889	10-20	Current expense	6	30,000.00
Jan. 1, 1891	10-20	....do	6	7,000.00
Jan. 1, 1895	10-20	Floating debt	6	20,000.00
Jan. 1, 1897	10-20	....do	6	8,500.00
		Total bonded indebtedness		106,982.00
The above comprises the total indebtedness to June 30, 1899.				
Total assessed value of real and personal property for the year 1898				2,186,509.26

RECAPITULATION.

County.	Assessed value.	Indebtedness.
Bernalillo	$5,719,261.00	$362,587.33
Chaves	1,907,049.00	50,000.00
Colfax	2,818,050.00	70,400.00
Donna Ana	2,435,753.00	98,188.84
Eddy	1,724,282.00	74,079.39
Grant	3,674,972.85	270,595.05
Guadalupe	700,257.00	30,478.88
Lincoln	1,608,226.00	57,715.00
Mora	1,016,120.00	101,823.14
McKinley [1]		
Otero [1]		
Rio Arriba	1,053,179.00	51,902.60
San Juan	873,258.00	21,290.16
San Miguel	4,440,364.00	496,896.00
Santa Fe	1,768,150.68	874,256.42
Sierra	1,344,495.00	68,623.00
Socorro	4,611,482.00	180,335.66
Taos	611,816.00	44,900.00
Union	1,631,500.00	36,631.67
Valencia	2,186,509.26	106,982.00
Total	40,124,724.79	2,997,665.12

[1] McKinley and Otero counties were created by the last legislature and are included in the counties from which they were formed in the assessment and debt of 1898 and until June 30, 1899.

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BANKS.

The statements of the different banks throughout the Territory of New Mexico show the following business for the fiscal year ending June 30, 1899:

First National Bank of Albuquerque	$2,080,450.04
First National Bank of Las Vegas	684,931.49
First National Bank of Santa Fe	632,731.79
First National Bank of Raton	243,543.78
San Miguel National Bank, Las Vegas	661,210.31
Las Vegas Savings Bank, Las Vegas	104,340.59
Silver City National Bank, Silver City	314,173.31
Bank of Commerce, Albuquerque	561,425.55
Sierra County Bank of Hillsboro	108,353.65
Bank of Roswell, Roswell	305,789.87
Bank of Deming, Deming	162,028.38
Exchange Bank of White Oaks	97,802.14
George D. Bowman & Sons, Las Cruces	63,837.93
Andrew Morton & Co., Springer	56,149.60
Taos County Bank, Taos	94,537.28

INTERNAL-REVENUE SERVICE, DISTRICT OF NEW MEXICO,
Santa Fe, N. Mex., July 20, 1899.

DEAR SIR: In response to your letter of the 18th instant, I have the honor to submit herewith a statement of the collections for the Territory of New Mexico, for the fiscal year ended June 30, 1899, from the various sources enumerated below, viz:

Assessed taxes, fines, penalties, and interest	$7,201.42
Beer stamps	7,352.22
Spirit stamps	1,121.34
Cigar and cigarette stamps	1,305.08
Tobacco stamps	89.00
Playing-card stamps	1.72
Special-tax stamps	20,978.94
Adhesive stamps	28,882.28
Total	66,932.00

Very respectfully,

A. L. MORRISON,
Collector Internal Revenue.

Hon. M. A. OTERO,
Santa Fe. N. Mex.

DISTRICT COURTS AND SOLICITOR-GENERAL,
LAS VEGAS, N. MEX., *August 31, 1899.*

SIR: I beg to acknowledge receipt of your letter of recent date, in which you ask me to report at some length on the condition of the counties comprising the fourth judicial district of this Territory, over the courts of which I have the honor to preside, in order that you may insert the same in the annual report which you make to the honorable Secretary of the Interior.

I regret that I have not the time to make as full a report as I would like to do as to the physical condition of the several counties, and their capability for development, but it would in any event hardly be necessary, as the compilations published in your last report set them out quite fully. I will, however, briefly refer to some matters connected with the judiciary of the Territory, confining myself more particularly to this district, and may then touch very slightly on some of the changes which have occurred in the counties comprising my district, during the past year.

The courts of this Territory are different from any in the States, inasmuch as they have jurisdiction over both Federal and Territorial cases. The entire Territory is divided into five judicial districts, the judge for each district being

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appointed by the President and confirmed by the Senate. In each of these districts two terms of the United States court are held annually for the trial of Federal cases, and in each county of the five districts two terms of the Territorial district court, for the trial of causes arising under the laws of the Territory, are provided by law. All of these terms are presided over by the several district judges.

The supreme court of the Territory consists of the five district judges, who meet annually at Santa Fe for the purpose of hearing such matters as are properly brought before them. From this court appeals lie to the United States circuit court of appeals, and to the Supreme Court of the United States, which is the court of last resort.

From the above it will be seen that the number of terms of court which a judge holds annually depends on the number of counties which are in his district, and the length of each term depends on the business to be done and the funds on hand in the county treasury to pay the court expenses.

The fourth judicial district consists of five counties, and the average terms of court as follows:

	Weeks.
Supreme court, about	7
United States court, about	4
San Miguel County, about	12
Colfax County, about	6
Guadalupe County, about	2
Mora County, about	4
Union County, about	3
Total weeks per year	38

In addition to this a large number of cases, which do not require the intervention of a jury, motions, orders, etc., are heard in chambers, out of court, so that the time of a judge in this Territory is fully occupied.

Our laws provide that each county shall levy a special tax for the carrying on of the Territorial courts, which tax, when collected, is paid into what is known as the court fund. As the amount collected in the several years varies, in the past the Territorial district courts have been held somewhat irregularly; but I believe that the finances of the several counties have so far improved that in the future these courts will be held at the regular terms—that is, twice each year in each county except in the county of Guadaloupe, where there is only money and business enough to warrant the holding of one term annually.

The county seats of each of the counties in the district, save Guadaloupe and Mora, are on the line of the railroad and are quite easily reached, although when holding a term of court in Clayton, the county seat of Union County, a railroad journey of 262 miles is necessary. To reach Puerto de Luna, the county seat of Guadaloupe County, requires an overland ride of some 80 miles, while to reach Mora, the county seat of Mora County, a 32-mile ride overland is necessary.

Acting as the supreme court, we have been kept much occupied. On our first assembling we found a very large docket confronting us for hearing—if I remember rightly, something over 60 cases. All of these have been heard, and decisions have been handed down in all of them but about a dozen opinions, and these will be handed down at a later day, so that when the supreme court convenes at its regular January term, 1900, there will be an entirely new docket to consider. I believe that I can say with safety that our course in insisting that all of the cases on the docket be heard meets with the general approbation of both the bar and the persons who are interested in the results.

It is perhaps unnecessary for me to say that the hearing of these cases imposed much arduous labor on us, but every member of the court cheerfully assumed the duties assigned to him.

It is needless for me to go into a detailed statement of the number of Territorial cases pending and disposed of in the district court of the several counties in my district, as the statement prepared by the efficient clerk of my court, Mr. Secundino Romero, which is published herewith, gives this information, and I refer you to it. Suffice it to say that crime is swiftly and surely punished in all of the counties in the district, and the knowledge that such is the case has had a deterrent effect on those contemplating wrongdoing. Anyone who has civil cases pending can get a speedy trial if he so desires. On the whole, I can say that the courts in my district are running in a very satisfactory manner, and so far as I know give general satisfaction to all law-abiding citizens. It shall be my aim so long as I have the honor to preside over the courts of the fourth judicial district of this

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Territory to so conduct them that the several terms may be regularly held and justice meted out with an even hand.

During the past year but few crimes of a heinous nature have been committed. In the entire district there have been but two or three murders committed, which is a most excellent record for a country so extensive as this and so sparsely settled, especially when we consider that so many people are engaged in nomadic pursuits. The larger part of the indictments returned into court for serious offenses were for the larceny of cattle, horses, and sheep. I am glad to say that the example made of such of these defendants as have been tried has kept others from repeating their offenses. The speedy punishment of this class of crimes is particularly necessary in a country like this, where the stock-raising interests are so large.

Union County, in my district, has had two "train robberies" during the year both occurring within a mile or two of each other, near the town of Folsom, on what is now known as the Colorado Southern Railroad. It is claimed that the first of these robberies was made by three men, one of whom died of wounds inflicted during a pursuit, another is under arrest, and only one of the party is at large. The last robbery was made by one man, who was wounded and is now in the penitentiary awaiting trial. The breaking up of these bands of outlaws will, I think, put an end to such robberies for some time to come. The alleged robbers were not residents of this Territory, but came in from the outside.

During the year I held the first term of court at the new court-house at Raton, the county seat of Colfax County. The court-house is pleasantly arranged, well cared for, and is an ornament to the city. It is a real pleasure to preside over a court where the surroundings are so agreeable. Raton being centrally located according to the population of Colfax County, court can be carried on at much less expense than at any other point in the county.

The people who reside in my district were never so well off in a material way as at the present moment. There is more money in the Territory than ever before, and it loans at much lower rates of interest to those who are of known responsibility than ever before. The rise in cattle, wool, and sheep, in which so many of our people are interested, has placed a large amount of money in circulation, and every mercantile and banking business feels the good times which are upon us. That the tariff be not changed materially for years to come is the wish of nine-tenths of our people, and if such wish is realized, in a few years the people of this district will be loaning to the Eastern money centers. In fact, it is almost impossible to realize the changed condition of our people during the last three years.

Respectfully yours,

WILLIAM J. MILLS, *Chief Justice, etc.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

REPORT OF THE SOLICITOR-GENERAL.

I have the honor to herewith submit my report of the doings of this office since I took possession of the same on the 7th of March, 1898.

During that time I have given 30 written opinions to different Territorial officers, at their request, upon various subjects.

I have appeared for and defended 4 suits in mandamus against the auditor in the district courts of the Territory, 1 of which I appealed to the supreme court of the Territory, where it is now pending; and on behalf of the Territory I have instituted 2 suits in the district court for Santa Fe County against the county commissioners of San Miguel County, one for the purpose of recovering from them and their bondsmen $30,000 due to the Territory from taxes alleged to have been illegally abated by that board, and the other to recover the penalty of $100 provided by law and the expenses of a special messenger to receive the election returns of that county, which the board failed to forward as provided by law.

In the supreme court, at the last term, I prepared and filed briefs in 12 cases, 4 of them civil, to recover taxes, 2 of which were argued and submitted and 2 are pending.

Of the 8 criminal cases appealed by convicted defendants, 2 were for murder, 2 for rape, 2 for larceny of animals, 1 for arson, and 1 for perjury. Of these cases 2 were reversed, 1 was affirmed, 2 have been argued and submitted, and 3 are to be argued at the adjourned term of the supreme court.

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NEW COMPILATION OF THE LAWS.

The compilation of the laws under the act of 1897 is generally very accurate and satisfactory, the only serious omission which I have observed being in section 1702, "Registration," where there is omitted the last portion of section 1215, Compiled Laws of 1884, in regard to the disposition of the registration lists, requiring two copies to be sent to the probate clerk, he to retain one and forward the other to the secretary of the Territory. This is a very important omission, and, while it is still the law, it should be made to appear in its proper place by inserting it at the end of section 1702.

In section 1654 the old sections are compiled exactly as they appear in the compilation of 1884, but it should be amended so as to be more explicit and conform to the evident intent of the legislature and the translation. This section is in regard to the election returns in districts comprising more than one county, by which the election returns are required to be made to "the county first appointed." A very slight amendment will be sufficient to make the section clear and explicit.

Section 1646, in regard to persons voting in another precinct than that of their residence, is repealed by section 1709, requiring a certificate of the board of registration that the party so applying is duly registered.

The school law in regard to the election of school directors, section 1532, should be amended so as to compel the old boards of directors to call the election as provided by law, and their failure so to do should be punished by removal from office and a heavy fine, to go to the school district. The directors have been taking advantage of the laxity of the law to keep themselves in office indefinitely by failing to call the election, to the great detriment of the school. Also, there should be adequate provision made for the canvassing of the votes at this election and giving proper certificates of election.

Section 1524, providing for the payment to the superintendent of schools of each county of $5 a day, should be repealed, as a salary is provided for that officer by section 1771.

Sections 2730 to 2737, inclusive, providing for the attachment of the body of a debtor, should be specifically repealed, as they have been held by the district courts to be repealed by implication. They are obsolete and should not appear in our laws, as they are sometimes sought to be invoked and enforced in justice of the peace courts.

Section 36, in regard to "acequias," was decided by the supreme court on the 24th of August last, in the case of Levy *v.* Ortega, to have been repealed, and the legislature should formally repeal the section in conformity with that opinion.

Sections 1072 to 1078, relative to the crime of murder, are doubtless repealed by implication by the crimes act of 1891. Under these sections the crime of murder was divided into five degrees, while the act of 1891 limited them to three. These are the sections referred to by the solicitor-general in passing upon the correctness of the compilation, and should be repealed by the legislature in terms.

In regard to appeals to the supreme court in criminal cases there is a manifest conflict between sections 3409 and 3420, Compiled Laws of 1897, which works a great injustice. These sections should be reconciled by an act which might either repeal the latter part of section 3420 or by an entirely new section on the subject.

The matter of costs on appeal is something that should be fixed by definite law. At present, under sections 3413, 3414, Compiled Laws of 1897, any person convicted of any crime may take an appeal to the supreme court with practically no expense to himself, but involving considerable expense to the Territory and unnecessary labor on the prosecuting officer, besides being an injustice to the clerks of the court who receive no compensation for their work in preparing transcript. Such appeals, I know, in many instances to be without merit and taken simply for the purpose of delay.

Section 2570, providing that the solicitor-general need not reside at the capital, should be repealed. He, as well as other Territorial officers, should at all times be ready to attend to the public business by having their residence at the capital of the Territory.

The statutes providing for district attorneys bringing tax suits, found at sections 649 and 2576–2579, should be reconciled and harmonized.

Sections 4007 and 4078 should be changed so as to provide for printing to be given to the lowest responsible bidder.

Section 1803, being chapter 35, Laws of 1895, does not in terms provide for the sheriff's fees as provided for in sections 1256–1257, Compiled Laws of 1884, which were omitted from the compilation of 1897, and these old sections should either be specifically added or excluded from such new sections.

There should be a provision that a summons in garnishment or attachment should be answered within twenty days from the service, to make the procedure

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uniform and expeditious, instead of having such answer returnable to a term of court.

Suits against Territorial officers should be brought in the court of the county wherein their offices are located; this would be no inconvenience to the plaintiff, while the public business might suffer and great inconvenience arise by requiring Territorial officers to go to distant parts of the Territory to defend suits against them.

The law should provide for a supersedeas bond on appeal to the supreme court in mandamus cases as in other civil actions.

Section 2935, providing the defendant shall answer within ten days after service in certain cases, is in conflict with section 19, subdivision 2 of the Code, which gives twenty days in which to answer, and should be amended so as to read "twenty days" instead of ten.

Section 928 should have inserted at the beginning of the section the words "the probate court shall have exclusive original jurisdiction in all of the following cases, to wit," as contained in the original act, section 48, chapter 90, page 221, Laws of 1889, which were omitted by the compilers through mistake. These words are very important, in fact indispensable for the proper construction of said section.

The Code of Civil Procedure, in my opinion, has given general satisfaction to the bench, bar, and litigants, and while some amendments may be necessary the Territory is to be congratulated upon the results obtained by its adoption.

Very respectfully,

EDWARD L. BARTLETT,
Solicitor-General.

SIR: In compliance with your request for information regarding the business of the supreme court of the Territory of New Mexico, I have the honor to respectfully submit the folling statement:

SUPREME COURT.

At the beginning of the present fiscal year, there were the following number of cases undisposed of and pending in the supreme court, to wit:

Number of cases brought up by appeal	28
Number of cases brought up by writ of error	39
Total number of cases pending	67

Which were brought up from the following districts:

From the first judicial district court—	
By appeal	0
By writ of error	8
From the second judicial district court—	
By appeal	13
By writ of error	13
From the third judicial district court—	
By appeal	1
By writ of error	5
From the fourth judicial district court—	
By appeal	4
By writ of error	2
From the fifth judicial district court—	
By appeal	11
By writ of error	10
Total number of cases	67

Of which the following is the standing and disposition:

Finally determined by affirmance of judgment	24
Finally determined by dismissal	3
Finally determined by reversal of judgment with instructions to grant a new trial in lower court	9
Finally determined by reversal of judgment with instructions to lower court to dismiss	3
Under advisement by the court	22
Continued to next regular term	3
To be heard at adjourned session, August 23, 1899	3
Total number of cases	67

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During the year there have been filed in my office sixteen applications for admission to the supreme court bar, the status of which is as follows:

Number of applicants admitted by supreme court	13
Number of applicants awaiting examination by committee	3
Total	16

Of the cases which have been finally determined by affirmance of judgment, four have been taken to the Supreme Court of the United States by writ of error, one has been taken by writ of error to the United States circuit court of appeals, and one has been granted a new hearing in this court, and will be heard at the adjourned session of August 28, 1899, and two are pending upon the motion for a rehearing in this court.

During the year there have been brought into this court the following number of new cases, all of which are returnable to the next regular term of the court:

Number of cases brought up by appeal	2
Number of cases brought up by writ of error	8
Total number of new cases	10

Brought into the court as follows:

From the first judicial district court—	
By appeal	1
By writ of error	1
From the second judicial district court—	
By writ of error	4
From the fifth judicial district court—	
By writ of error	4
Total number of new cases	10

At the time that I took charge of the affairs of this office, nearly one year ago, the files in this office were in a very disorderly and lamentable condition, but after two months and a half of constant and hard work I have succeeded in arranging the files in a proper and accessible manner. Every case which had been finally determined, from No. 1 to the present time, has been separately indexed, each index stating the papers contained in the particular case, and wrapped up in strong manila paper, and the number of the case marked on the outside of the bundle. In a good many instances, owing to the careless manner in which the files had been kept, papers of great importance are missing, in several cases no papers at all having been found by me.

The supreme court has not held a regular session during the year 1899, owing to the fact that the last legislative assembly changed the time of its meeting, and the court entered an order fixing the times of the United States courts in accordance and conformity with the act of the legislative assembly, and the following is a correct calendar of the times and places of the meeting of the United States and Territorial courts:

The supreme court meets in Santa Fe on the first Wednesday after the first Monday in January, 1900, and annually thereafter.

TERMS OF THE DISTRICT COURTS.

First district.—In Santa Fe, United States court, first Mondays in March and September. Santa Fe County, first Mondays in March and September. San Juan County, third Mondays in April and October. Rio Arriba County, second Mondays in May and November. Taos County, first Mondays in June and December.

Second district.—In Albuquerque, United States court, third Mondays in March and September. Bernalillo County, third Mondays in March and September. Valencia County, first Mondays in March and September.

Third district.—In Lascruces, United States court, first Mondays in April and October. Donna Ana County, first Mondays in April and October. Grant County, first Mondays in March and September. Otero County, first Mondays in May and November. Sierra County, fourth Mondays in May and November.

Fourth district.—In Las Vegas, United States court, second Mondays in May and November. San Miguel County, second Mondays in May and November. Union County, first Mondays in March and September. Colfax County, third Mondays in March and September. Mora County, fourth Mondays in June and December. Guadaloupe County, fourth Mondays in June and December.

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Fifth district.—In Socorro, United States court, last Monday in April and second Monday in November. Socorro County, fourth Monday in April and second Monday in November. Eddy County, fourth Monday in February and second Monday in September. Lincoln County, first Monday in April and third Monday in October. Chaves County, second Monday in March and fourth Monday in September.

The next regular session of the supreme court will begin on the 3d day of January, 1900. The supreme court has fixed the first day of the term for the examination of all the applicants for admission to the bar, and has a standing committee for that purpose. Rules of the supreme and district courts, in pamphlet form, a supply of which is always on hand in this office, will be furnished to anyone who applies for the same, free of charge.

THE BAR ASSOCIATION.

The New Mexico Bar Association is a corporation organized under the laws of the Territory of New Mexico, its main object being the cultivation of the science of jurisprudence: to promote reform in the law; to elevate the standard of integrity, honesty, and courtesy in the legal profession; to facilitate the administration of justice; to encourage a thorough and liberal education, and to cherish a spirit of brotherhood among the members thereof.

The officers of the organization are a president, five vice-presidents, a secretary, and a treasurer, together with the usual number of standing committees. Its present membership is about 125, 15 of whom are nonresidents.

The following have been its presidents since the time of its organization: William A. Vincent, Las Vegas, 1886; Neil B. Field, Albuquerque, 1887; S. B. Newcomb, Las Cruces, 1888; Frank Springer, Las Vegas, 1889; F. W. Clancy, Santa Fe, 1890; William C. Hazledine, Albuquerque, 1891; A. B. Elliot, Hillsboro, 1892; A. A. Jones, Las Vegas, 1893; J. G. Fitch, Socorro, 1894; T. B. Catron, Santa Fe, 1895; Neil B. Field, Albuquerque, 1896; A. B. Fall, Las Cruces, 1897; R. E. Twitchell, Las Vegas, 1898.

The following are its present officers and standing committees: President, R. E. Twitchell, Las Vegas; vice-president, first district, E. A. Fiske, Santa Fe; vice-president, second district, E. W. Dobson, Albuquerque; vice-president, third district, T. F. Conway, Silver City; vice-president, fourth district, W. C. Wrigley, Raton; vice-president, fifth district, A. A. Freeman, Eddy; secretary, E. L. Bartlett, Santa Fe; treasurer, G. W. Knaebel, Santa Fe.

Delegates to American Bar Association: Frank Springer, N. C. Collier, W. B. Childers.

Delegates to National Bar Association: T. B. Catron, E. W. Dobson, N. B. Field.

Executive committee: The president, the secretary, ex officio, F. W. Clancy, W. H. Pope, A. C. Campbell.

Legal education: H. L. Warren, W. A. Hawkins, R. C. Gortner, L. C. Fort, R. W. D. Bryan, S. B. Gillett.

Grievances: T. B. Catron, B. M. Read, J. Leahy, G. A. Richardson, W. B. Childers.

Admission: O. N. Marron, C. A. Spiess, A. B. Elliott, S. Alexander, B. F. Adams.

Revision of constitution and by-laws: A. A. Jones, J. G. Fitch, T. A. Finical, S. Alexander, E. L. Medler.

Legal biography: S. B. Newcomb, E. V. Chavez, A. V. McMillen, A. L. Morrison, C. W. Johnston.

History of bench and bar: R. E. Twitchell, William Breeden, L. B. Prince.

Law reform: B. S. Rodey, H. B. Ferguson, H. L. Warren, N. B. Laughlin, E. F. Conway.

The following quotation from the last report of the secretary of the association, I believe, will give better information as to the doings and status of the association.

"At this time I deem it not amiss to call the attention of the members, as well as that of other associations to whom these minutes shall come, to the fact, which is little known, that we are among the very first of the State or Territorial bar associations to be organized west of the Mississippi River. Of the thirty-eight State and Territorial bar associations in the United States, nineteen were organized before ours and seventeen after. I have been unable to get the date of the organization of the associations in Kentucky and Mississippi, although I have written to the secretaries for the same. Our work, while done quietly, has been valuable and far-reaching, not only for the profession, but for the advantage of the people in the Territory generally. The money which we have contributed has been expended for necessary printing; the purchase of rare and valuable books, and flowers for our dead, amounting to about $2,500, and we have on hand

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about $400. There has only been $250 expended for services and expenses of officers since the organization of the association, and $200 expended for banquets. A brief résumé of the work of the association may be interesting.

"It was organized at Santa Fe, January 19, 1886. The constitution and by-laws adopted were based upon those of Illinois and Missouri. They have been amended at various sessions since to meet changed conditions.

"Hon. William A. Vincent, who shortly afterwards was chief justice of the Territory, was the first president. He has since removed to Chicago, where he is now practicing his profession.

"At the session of 1887, a strong memorial was addressed to Congress, urging the passage of an act for the settlement of land-grant titles in the Territory; also a memorial to the Territorial legislature, recommending the passage of various laws to conform to modern usage and practice. Several of these laws recommended by the association were enacted by the legislature. The report was prepared by John H. Knaebel, and is a most instructive and interesting document. At the session of 1888, the president, Mr. Field, called the attention of the association to the gross abuses practiced by district attorneys and clerks of the court in the matter of their fees, and the enormous expense entailed on the Territory thereby; upon which the association took such prompt action that the flagrant abuses complained of were promptly corrected at the following session of the legislature. At this session delegates were first elected to the American Bar Association, and we have continued to elect delegates ever since. At the session of 1889, this association became a member of the National Bar Association and elected delegates thereto. It prepared and recommended for passage a number of important bills, all of which were enacted into laws by the legislature, among them the act correcting the 'omissions, inconsistencies, and contradictions' in the Compiled Laws of 1884. The act relating to probate law, administration, and wills, the assignment law, the act prescribing form of acknowledgment to deeds, as recommended by the National Bar Association, and a number of others of less importance. The committee on the history of bench and bar was created at this session, the reports of which have been an unique and interesting feature of the meetings since. At the session of 1890, the then president, Mr. Springer, in his address, again called the attention of the association to the necessity of Congressional action in the settlement of private land grants. The association took hold of this matter with such vigor that its memorial to Congress on the subject was acted upon by that body in the following year, by creating a Court of Private Land Claims, embodying in the act most of the recommendations of the association. It also memorialized Congress for the creation of the Fifth judicial district, which was shortly after done. At the session of 1891, in his address to the association, the president, Mr. Clancy, used the following language:

"'Before concluding, I must congratulate you upon what the association has succeeded in accomplishing during its brief existence. It is but five years since our first organization and yet as direct results of our exertions, abuses of their official powers by public prosecutors have been suppressed, robbery of the public treasury by our courts' officials has been stopped, beneficial legislation has been secured on the subject of wills and descents, negotiable paper, acknowledgments of deeds, justices of the peace and constables, assignments, pleading, evidence, and others, including the passage of acts to remedy numerous inconsistencies and contradictions in our statutes.

"'At this session bills were prepared and recommended which were enacted into laws by the legislature providing for the summer session of the supreme court, redistricting the Territory for judicial purposes and fixing the time for holding courts in the several counties, relative to judgment liens, the law fixing return days, and relative to appeals and writ of error, and the crime law defining murder and other felonies and taking away the powers of juries to fix punishments.'

"In 1892, the association prepared amendments to the act creating the Court of Private Land Claims and an elaborate argument in favor of them, and appointed a committee to present and urge the same upon Congress. It also prepared, printed, and paid for the rules of the Court of Private Land Claims, these rules being adopted by it and now in force.

"At the session of 1893, the association was incorporated under the Territorial laws.

"A complete set of rules for the supreme court and district courts in law and equity was carefully prepared and submitted to the supreme court then in session, which adopted and promulgated the same. The association paid the expense of proper indexing of the same and assumed to pay for the printing of it should it be necessary, but it afterwards discovered that this expense could be and was paid by the Territory.

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"At the session of 1894, the matter of a code for the Territory was thoroughly discussed, and the first steps were taken in the direction of a code by appointing a committee of five to prepare and present to the next meeting a code of civil practice.

"At the session of 1895 this committee reported a proposed code, which was discussed for several days and nights, section by section, amended, changed, and finally adopted by a vote of 31 ayes and 15 noes, and recommended to the legislature, then in session, for passage. This bill passed the council at that session, but failed in the house.

"At the session of 1896, the matter of a revision of the laws, which had not been compiled since 1884, occupied the attention of the association, a special committee on revision consisting of ten members, being the five members of the committee on law reform and five other members, one from each judicial district, was appointed for the purpose of preparing a complete revision of the existing laws, and performed a great deal of work in that direction. At the present session of 1897 it was reported that the code, which had failed at the previous session of the legislature, had been passed as recommended by the association, and went into effect on the 1st day of August of this year. The legislature also passed a law providing for the recompilation of the laws of the Territory, appointing a commission for that purpose, so that the committee on revision decided that it had no more work to perform and its labors were not continued.

"By the request of the supreme court, the association prepared a new set of rules for the supreme and district courts, to conform with the practice under the new code, and the association embodied in them a new rule for the admission of applicants to practice law, based upon the laws of Illinois and Ohio on that subject, and being similar to the bill prepared by the association at its session of 1893. These rules were adopted and promulgated by the courts as recommended by the association on the 1st day of September, 1897.

"It is a noteworthy fact that none of the laws recommended by the association have been repealed or altered by the legislature, and that all of them have stood the test of investigation by the courts.

"Such is a brief summary of the actual results accomplished by the association, while the amount of work involved to bring them about has been enormous, and I believe that we may congratulate ourselves upon our accomplishments as compared with that of any other similar association in the United States. It will be seen from the above that there has not been a single meeting without earnest work for the public good and tangible results accomplished."

The annual meeting of the association occurs at the time of the regular session of the supreme court of the Territory, and its next meeting will be held in January. The supreme court at its next regular session will meet on the 3d of January, 1900, and no doubt the session will be held in its beautiful and commodious rooms in the new capitol building, which is now nearing completion.

Trusting that this information in regard to the supreme court of the Territory and the New Mexico Bar Association will be satisfactory, and awaiting your further commands, I remain,

Yours, most respectfully,

JOSÉ D. SENA,
Clerk of the Supreme Court.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Report of business transacted in the first judicial district court of the Territory of New Mexico from July 1, 1898, to June 30, 1899.

UNITED STATES.

CIVIL.

Pending June 30, 1898	8
Disposed of by dismissal and judgment	4
Pending June 30, 1899	4

CRIMINAL.

Pending June 30, 1898	14
New causes	7
Disposed of by dismissal	8
Disposed of by trial	10
Pending June 30, 1899	8

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TERRITORIAL.

TAOS COUNTY.

Pending June 30, 1898	22
New causes instituted	24
Disposed of by dismissal	3
Disposed of by trial	13
Pending June 30, 1899	30

CRIMINAL.

Pending June 30, 1898	21
Pending June 30, 1899	21

SAN JUAN COUNTY.

CIVIL.

Pending June 30, 1898	15
New causes instituted	27
Disposed of by dismissal	5
Disposed of by trial and judgment	21
Pending June 30, 1899	16

CRIMINAL.

Pending June 30, 1898	6
New causes instituted	6
Diposed of by trial	1
Pending June 30, 1899	11

RIO ARRIBA COUNTY.

CIVIL.

Pending June 30, 1898	28
New causes instituted	3
Disposed of by dismissal	1
Disposed of by trial	1
Pending June 30, 1899	29

CRIMINAL.

Pending June 30, 1898	19
New causes instituted	
Disposed of by dismissal or trial	
Pending June 30, 1899	19

SANTA FE COUNTY.

CIVIL.

Pending June 30, 1898	189
New causes instituted	100
Disposed of by dismissal	77
Disposed of by trial and judgment	55
Pending June 30, 1899	157

CRIMINAL.

Pending June 30, 1898	38
New causes instituted	40
Disposed of by dismissal	38
Disposed of by trial	13
Pending June 30, 1899	27

RECAPITULATION.

CIVIL.

Causes pending June 30, 1898:	
United States	8
Taos County	22
San Juan County	15
Rio Arriba County	28
Santa Fe County	189
Total	262

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Causes filed since June 30, 1898:	
United States	
Taos County	24
San Juan County	27
Rio Arriba County	3
Santa Fe County	100
Total	154
Causes tried and dismissed:	
United States	4
Taos County	16
San Juan County	26
Rio Arriba County	2
Santa Fe County	132
Total	180
Causes pending June 30, 1899:	
United States	4
Taos County	30
San Juan County	16
Rio Arriba County	29
Santa Fe County	157
Total	236

CRIMINAL.

Causes pending June 30, 1898:	
United States	14
Taos County	21
San Juan County	6
Rio Arriba County	19
Santa Fe County	38
Total	98
Causes filed since June 30, 1898:	
United States	7
San Juan County	6
Santa Fe County	40
Total	53
Causes tried and dismissed:	
United States	13
San Juan County	1
Santa Fe County	51
Total	65
Causes pending June 30, 1899:	
United States	8
Taos County	21
San Juan County	11
Rio Arriba County	19
Santa Fe County	27
Total	86

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DISTRICT COURT, VALENCIA COUNTY.

Criminal cases pending on docket June 30, 1898		22
Criminal cases instituted during year ending June 30, 1899		7
Total		29
Disposed of:		
Convictions	1	
Dismissals	10	
		11
Balance cases pending June 30, 1899		18
Civil actions pending June 30, 1898		44
Civil actions filed during year ending June 30, 1899		28
Total		72
Disposed of:		
Tried	19	
Dismissed	11	
		30
Balance cases pending June 30, 1899		42

DISTRICT COURT, BERNALILLO COUNTY.

Criminal cases pending on docket June 30, 1898		72
Criminal cases instituted during year ending June 30, 1899		64
Total		136
Disposed of:		
Convictions	33	
Acquittals	5	
Dismissals	12	
		50
Balance cases pending June 30, 1899		86
Civil actions pending June 30, 1898		289
Civil actions filed during year ending June 30, 1899		251
Total		540
Disposed of:		
Tried	255	
Dismissed	71	
		326
Balance cases pending June 30, 1899		214

DISTRICT COURT, SECOND JUDICIAL DISTRICT.

Criminal cases pending June 30, 1898		4
Cases instituted during year ending June 30, 1899		6
Total		10
Disposed of:		
Convictions	4	
Dismissals	4	
		8
Balance cases pending June 30, 1899		2
Civil causes pending June 30, 1898:		
Chancery		2
Law		9
Total		11

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Civil causes instituted during year ending June 30, 1899:		
Bankruptcy—		
Voluntary	9	
Involuntary	1	
Other actions	2	
		12
Total		28
Disposed of, tried, etc		7
Balance causes pending June 30, 1899		16

LAS CRUCES, N. MEX., *July 31, 1899.*

SIR: Responding to your favor of 1st instant, asking for a report of the transactions of this office for the fiscal year ending June 30, 1899, I have the honor of handing same to you herewith, sincerely trusting it may prove satisfactory.

I beg to remain, yours, most respectfully,

JAMES P. MITCHELL, *Clerk.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

Report of the transactions of the office of the third judicial district court for the fiscal year ending June 30, A. D. 1899.

United States civil cases pending July 1, 1898	None.
United States civil cases filed from July 1, 1898, to June 30, 1899	2
Balance of United States civil cases pending July 1, 1899	2
United States criminal cases pending July 1, 1898	10
United States criminal cases filed from July 1, 1898, to June 30, 1899	18
	28
Disposed of	16
Balance criminal cases pending July 1, 1899	7

DONNA ANA COUNTY.

Civil cases pending July 1, 1898	20
Civil cases filed from July 1, 1898, to June 30, 1899	64
	84
Disposed of	53
Balance civil cases pending July 1, 1899	31
Chancery cases pending July 1, 1898	10
New cases	None.
	10
Disposed of	4
Balance pending July 1, 1899	6
Criminal cases pending July 1, 1898	33
Criminal cases filed from July 1, 1898, to June 30, 1899	65
	98
Disposed of	64
Balance pending July 1, 1899	34

Criminal cases docketed during period July 30, 1898, to June 30, 1899, in Grant County, N. Mex., 113—4179 to 4291, inclusive.

Cases disposed of July 30, 1888, to June 30, 1899, including cases docketed prior to July 30, 1898, as follows:

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Nolle—4175, 4179, 4182, 4183, 4184, 4185, 4186, 4187, 4188, 4190, 4192, 4237, 4240, 4250, 4265, 4270, 4279, 4280, 4286, 4287.

Acquittals—4191, 4254, 4275, 4277.

Change of venue—4196.

No bills—4195, 4197, 4198, 4258, 4261, 4262, 4263, 4264.

Convictions—these include penitentiary and jail sentence, fines for violating statutory laws, etc.: 4181, 4189, 4194, 4200, 4204, 4205, 4206, 4207, 4208, 4210, 4211, 4212, 4213, 4214, 4215, 4216, 4217, 4218, 4219, 4220, 4221, 4222, 4223, 4224, 4225, 4226, 4227, 4228, 4229, 4230, 4231, 4232, 4233, 4234, 4235, 4236, 4238, 4239, 4243, 4244, 4245, 4246, 4247, 4248, 4249, 4260, 4268, 4269, 4271, 4273, 4274, 4281, 4288.

Dropped with leave: 4156, 4174, 4178.

Dismissed at defendant's costs: 4201, 4241, 4272, 4283.

Dismissed at plaintiff's costs: 4176, 4177, 4290, 4291.

Total number of cases pending June 30, 1899: 32.

Civil and chancery cases docketed during period July 30, 1898, to June 30, 1899, Grant County, N. Mex., 77—3411 to 3487, inclusive.

Cases disposed of July 30, 1898, to June 30, 1899, including cases docketed prior to July 30, 1898, as follows:

Judgment for plaintiff—2745, 2894, 3466, 3454, 3465, 3361, 3410, 3421, 3426, 3417, 3470, 3430, 3151, 3429, 3437, 2871, 2992, 3362, 3419, 3423, 3428, 3424, 3446, 3410.

Judgment for defendant: 3431, 3442.

Final decree—2646, 2647, 3405, 3414, 3415, 3435, 3436, 3441, 3443, 3456.

Insanity committee appointed—3427, 3433.

Insanity, defendant discharged—3479.

Dismissed—2915, 2989, 3122, 3174, 3197, 3323, 3268, 3269, 3271, 3272, 3273, 3274.

Dismissed at plaintiff's costs—3026, 3170, 3304, 3352, 3393, 3395, 3396, 3409, 3412, 3413, 3179, 3416, 3438, 3448, 3451, 3459, 3462, 3463.

Dismissed at defendant's costs—3312, 3477, 3478.

Dismissed, costs divided—3394.

Total number of cases pending June 30, 1899—chancery, 19; civil, 63.

SIERRA COUNTY.

Civil cases pending July 1, 1898	4
Civil cases filed from July 1, 1898, to June 30, 1899	11
	15
Disposed of	10
Balance pending July 1, 1899	5
Chancery cases pending July 1, 1898	5
New cases filed	None.
	5
Disposed of	3
Balance pending July 1, 1899	2
Criminal cases pending July 1, 1898	13
Criminal cases filed from July 1, 1898, to June 30, 1899	34
	47
Disposed of	8
Balance pending July 1, 1899	39

OTERO COUNTY.

Civil cases pending July 1, 1898	None.
Civil cases filed from July 1, 1898, to June 30, 1899	1
	1
Disposed of	None.
Balance pending July 1, 1899	1

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Causes pending in the fourth judicial district on June 30, 1898, and new cases brought up to June 30, 1899, and disposition of same to June 30, 1899:

UNITED STATES.

CIVIL.

Pending June 30, 1898	2
Disposed of	1
Pending June 30, 1899	1

CRIMINAL.

Pending June 30, 1898	12
New cases	15
	27
Disposed of	19
Pending June 30, 1899	8

SAN MIGUEL COUNTY.

CIVIL.

Pending June 30, 1898	341
New cases	104
	445
Disposed of	79
Pending June 30, 1899	366

CRIMINAL.

Pending June 30, 1898	132
New cases	52
	184
Disposed of	87
Pending June 30, 1899	97

COLFAX COUNTY.

CIVIL.

Pending June 30, 1898	110
New cases	79
	189
Disposed of	48
Pending June 30, 1899	141

CRIMINAL.

Pending June 30, 1898	66
New cases	65
	131
Disposed of	47
Pending June 30, 1899	84

MORA COUNTY.

CIVIL.

Pending June 30, 1898	78
New cases	26
	104
Disposed of	21
Pending June 30, 1899	83

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CRIMINAL.

Pending June 30, 1898	36
New cases	22
	58
Disposed of	30
Pending June 30, 1899	28

UNION COUNTY.

CIVIL.

Pending June 30, 1898	31
New cases	32
	63
Disposed of	26
Pending June 30, 1899	37

CRIMINAL.

Pending June 30, 1898	35
New cases	18
	53
Disposed of	27
Pending June 30, 1899	26

GUADALUPE COUNTY.

CIVIL.

Pending June 30, 1898	20
New cases	8
	28
Disposed of	6
Pending June 30, 1899	22

CRIMINAL.

Pending June 30, 1898	29
New cases	24
	53
Disposed of	21
Pending June 30, 1899	32

DEAR SIR: In compliance with your request of recent date, I beg to submit the following report of the business of this office for the year ending June 30, 1899:

TERRITORIAL CIVIL CASES.

Pending July 1, 1898	304
Filed during year	134
Total	438
Disposed of during year	195
Pending July 1, 1899	243

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TERRITORIAL CRIMINAL CASES.

Pending July 1, 1898	97
Filed during year	71
Total	168
Disposed of during year	73
Pending July 1, 1899	95

UNITED STATES CIVIL CASES.

Pending July 1, 1898	4
Filed during year	7
Total	11
Disposed of during year	4
Pending July 1, 1899	7

UNITED STATES CRIMINAL CASES.

Pending July 1, 1898	6
Filed during year	2
Total	8
Disposed of during year	4
Pending July 1, 1899	4
Total cases pending July 1, 1898	411
Total cases filed during year	214
Grand total	625
Total cases disposed of during year	276
Total cases pending July 1, 1899	349

Respectfully,

J. E. GRIFFITH, *Clerk.*

Governor M. A. OTERO,
Santa Fe, N. Mex.

OFFICE OF THE ADJUTANT-GENERAL,
Santa Fe, N. Mex., July 1, 1899.

SIR: I have the honor to make my report of the condition of the National Guard of New Mexico at the close of the fiscal year ended June 30, 1899. Since the date of my last report the volunteers from New Mexico in the First United States Volunteer Cavalry and in the First Territorial United States Volunteer Infantry have been mustered out of the Volunteer Army and returned to their homes and quietly settled down to their former business pursuits, having served their country faithfully and won distinction and honor in every situation wherever placed, and received from their countrymen the grateful applause due to their valor.

The several organizations of the National Guard were much depleted by volunteer enlistments and some of them almost wholly disorganized. The work of reorganization has proceeded slowly. Many of the volunteers returned in poor health, with their systems filled with fevers contracted in Cuba, and have not felt like taking up National Guard work; but they are now manifesting more interest, and in a short time the Guard will be stronger and more effective in every way than before the war.

The official roster of the National Guard is as follows, viz:

Commander-in-chief, Miguel A. Otero; adjutant-general, William H. Whiteman; judge-advocate-general, Col. Ralph E. Twitchell; surgeon-general, Col. W. R. Tipton; aides-de-camp, Col. E. Godwin-Austen, Col. Harry Whigham, Col. E. W. Dobson, Col. Venceslado Jaramillo, Col. J. J. Frey, Col. J. E. Hurley, Maj. James G. Meadors, Maj. R. S. Goss.

First regiment of infantry: Colonel, John Borrodaile; lieutenant-colonel,

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Robert C. Rankin; surgeon, Maj. John F. Pearce; chaplain, Capt. Frederick J. Bennett; adjutant, Lieut. E. L. Medler; quartermaster, Lieut. Louis H. Chamberlin; sergeant-major, Boston E. Barnhill; quartermaster-sergeant. E. B. Booth; hospital steward, Clarence R. Helper.

First battalion: Major, vacant; assistant surgeon, Capt. H. M. Smith; chaplain, Capt. George Selby; adjutant, Lieut. B. F. Forsythe; quartermaster, Lieut. H. W. Kelly.

Company I: Captain, Hanford W. Taylor; first lieutenant, Herman C. Ilfeld; second lieutenant, Royal Prentice.

Second battalion: Major, vacant; adjutant, vacant; quartermaster, vacant; chaplain, Capt. Paul Silberton.

Company B: Disorganized.

Company G: Captain, Charles E. Burg; first lieutenant, James E. Elder; second lieutenant, Frank H. Strong.

Third battalion: Major, Eugene Van Patten; adjutant, Lieut. John Francis Findlay; quartermaster, Lieut. Phœbus Frudenthal; assistant surgeon, Capt. John McConnell; chaplain, Capt. Pedro Lasaign; sergeant-major, James Finley, quartermaster-sergeant, Henry Rynerson; ordnance sergeant. Mariel Valdez; color-sergeant, Juan Pedragon; hospital steward, Precillano Moreno.

Company A: Captain, Pedro Pedragon; first lieutenant. Cesario Pedragon; second lieutenant, Margarito Padilla.

Company B: Captain, Clinton B. Llewellyn; first lieutenant, Humboldt Casad; second lieutenant, Francisco Ribera.

Company D: Captain, Gregario Garcia; first lieutenant, Solomon C. Garcia; second lieutenant, vacant.

First squadron of cavalry: Major, Frederick Muller; surgeon, Maj. J. H. Sloan; adjutant, Sherard Coleman.

Troop A: Captain, Willard S. Hopewell; first lieutenant, J. B. McPherson; second lieutenant, Peter Crumrine.

Troops C, E, and F were disorganized by enlistments in the volunteer service. Troop E is being reorganized, and this popular organization will soon again take its proper place in the National Guard.

GATLING-GUN SQUAD.

The Gatling-gun squad was also disorganized by enlistment in the volunteer service and by the death of its commanding officer, First Lieut. F. W. Wientge, who died soon after his muster out of the Volunteer Army. The squad is now being reorganized, and within the next thirty days will again take its place in the National Guard.

SIGNAL CORPS.

The signal corps was disorganized by enlistments in the volunteer service, but it is hoped that in a short time reorganization will be perfected. This corps was commanded by Capt. W. C. Reid, who commanded Company F in the First Territorial United States Volunteers and is still in the National Guard service.

Pursuant to Special Orders, No. 4, dated Santa Fe, May 4, 1899, I left Santa Fe on the 4th day of May, and proceeded to Roswell, N. Mex., where I arrived on the 6th day of May, for the purpose of inspecting the New Mexico Military Institute, situated at that place, as directed by said order.

The inspection was made on the 8th day of May, 1899, and was as thorough in every respect as the same could be made. The notice to the superintendent of the intended inspection was received by him on the same day of my arrival at Roswell, so that there was but little time for preparation, and the conditions I found must necessarily have been the ordinary or normal condition of the institution. I inspected every room in the building, beginning with the dormitories. I found the bedsteads used were of cast iron, made for one person, each room being occupied by two students. I tumbled the bedding off and closely examined the mattresses and bedding, and found same fresh and clean and free of vermin. The floors and walls of the building throughout showed most cleanly care. Especial attention was given to an examination of the closets and the drainage therefrom. I found that a sewer pipe had been extended from the school building in a southeast direction to the river, affording perfect drainage from the closets and bathrooms. The plumbing seemed to be in perfect order, and I was unable to detect any bad odors in or about the closets or about the entire building.

I made a close examination of the groceries and provisions found on hand, and in every instance found the quality excellent and free of adulteration. I dined at the institution, and was served with the same kind of food that was given the students.

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I found the food plentiful, well cooked, well seasoned, and, in fact, just such a dinner as may be found in the homes of people of middle life all over the country.

I witnessed an exhibition drill of the cadets, both in company and battalion formation, and was greatly pleased with their movements, which showed excellent instruction and discipline. I made a careful inspection of the cadets, of their arms, accoutrements, and uniforms, and found all in good condition. The arms furnished by the Territory are kept in a room in the basement set apart for that purpose, and appear to receive good care. I found 65 cadets present for duty and they appeared very proficient in the most recent system of tactics, and even the smallest cadets were familiar with modern tactics, the manual of arms, and the advanced bayonet exercises especially adapted to the Krag-Jörgenson rifle.

The college building is a handsome, substantial structure of brick, containing three stories and a basement, situated about one-half mile north of the business center of Roswell. The grounds extend over 40 acres of land overlooking the town. The situation is a beautiful and healthy one. The building contains 30 nice, airy, wholesome bedrooms, besides class rooms, office, kitchen, dining room, pantry, laundry, bathroom, and closets. The furnishings are comfortable and substantial. The recitation rooms are equipped with excellent twentieth century chair desks, which are said to be the most comfortable now in use. The building is heated by steam throughout from a large boiler in the basement, and there is a good supply of hot and cold water on every floor. The building is lighted by an excellent acetylene plant located about 100 feet away. The water supply is furnished from a tank of 10,000 gallons capacity, which is kept filled by means of a steam pump.

An examination of the course of study reveals the practical nature of the school. Four years of preparatory work are required, so that any student can enter who knows how to read, write, spell, and apply the fundamental rules of arithmetic. The preparatory course is followed by four years of collegiate work. The studies are such as are usually found in institutions of like character. The text-books in use in the preparatory course are those adopted for use in the Territorial public schools. In addition, there is taught the art of war, theoretical tactics, the manual of arms, and in fact everything usually taught in high-class military schools. Especial attention is paid to proper gymnastic exercises, and to reasonable and healthful athletic sports necessary to the physical, mental, and moral good of the students.

There are employed in the institute a superintendent, commandant of cadets, three instructors, matron, engineer, two cooks, janitor, and laundryman, at a cost of $6,000 per annum. The superintendent, Maj. James G. Meadors, is a graduate of Washington and Lee University of Virginia, and is a gentleman of fine culture, full of energy and zeal, devoted to the institution, ambitious to succeed, and, if properly supported, will make the institute so successful that every citizen of New Mexico may well be proud of it. The success already attained, the progress made in a single year, is highly creditable to the superintendent and to his able assistants, as well as to the people of Roswell, who take great and commendable pride in the institution. Mr. J. W. Willson, commandant, a graduate of the Virginia Military Institute, is an excellent man for the place. Of the other instructors, Mr. W. S. Fitzgerald, a graduate of Vanderbilt University, Mr. W. H. Whitten, graduate of Massachusetts Institute of Technology, Mr. L. Martini-Mancini, graduate of military school of Italy, ex-lieutenant of cavalry, I saw but little. They are all gentlemen of fine appearance and address, are represented to be excellent instructors, and give to the superintendent a hearty and loyal support. Mrs. Meadors, the matron, is an excellent, kind-hearted lady, who gives her whole time and care to the institution, takes great pride in the success of her husband's administration, and contributes very materially to such success.

The only commissioned officer in the institute is the superintendent, who holds a commission as major and aid-de-camp on the staff of the governor. I am of the opinion that proper rank in the superintendent, commandant, and instructors is absolutely essential to the maintenance of authority and respect in an institution of this character. The failure to make provision by law for giving rank to these officers is the result of an oversight of the legislative assembly, which will certainly be rectified when called to its attention; in view of which I respectfully recommend that temporary commissions be issued to the superintendent, commandant of cadets, and instructors, subject to the action of the legislative assembly at its next session, respectively, the superintendent to be colonel, the commandant to be major, and the instructors to be captains. I also regard it as indispensable that the next legislative assembly should make provision by law for commissions to be issued by the superintendent to captains and lieutenants of cadets, and for

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the appointment of noncommissioned officers from the cadets, their appointment and tenure to be regulated by law, or under such rules and regulations as the board of regents may prescribe.

The institute is provided with 80 Springfield rifles, caliber .45, and their accoutrements. These were furnished some months ago under your order, although the institute was not entitled to them under any law in existence. They are simply regarded as a loan until such time as the necessities of the National Guard may require their return. In my opinion provision should be made by law for properly equipping the institute with arms. The Springfield rifle is not at all suited to the younger cadets, being entirely too heavy. They should be supplied with a piece of modern artillery, sabers, and other arms necessary to teach and illustrate the art of war.

The eminent success of the institute in this, the first year of its existence, gives great encouragement for the future. This hope, however, may be frustrated by a failure to make prompt provision for its immediate necessities and for its expansion. Already the dormitories are filled to the limit of their capacity. There are 30 students in attendance who live or board in Roswell outside of the institute. I regard it as of the utmost importance and necessary to the success of the institute that all students should reside in the barracks. Those who live outside are liable to become lax in responding to the discipline of the school, while those who live inside will become envious of what seems to them the greater privileges enjoyed by those living outside. All students should be at all times under the eye and authority of the officers of the school. In matters of discipline there should be no divided authority between officers and parents.

There is an immediate demand for more commodious quarters. The institute should be provided at once with thirty more bedrooms, a room for a library, gymnasium, society halls, and storehouse. The laundry should be removed from the basement and placed in a separate building. I am aware that much of this can not be accomplished without legislative authority, but if there exists authority in the board of regents to provide for the more pressing needs of the institute by the construction of a temporary board structure, I should strongly recommend its exercise.

I desire to acknowledge my indebtedness to the officers of the institute and the people of Roswell for the many courtesies extended to me during my visit to the institute while in the performance of my duty.

I have the honor to be, etc., very respectfully, your obedient servant,

W. H. WHITEMAN,
Adjutant-General.

Hon. MIGUEL A. OTERO.
Governor of New Mexico.

NEW MEXICO'S WAR RECORD.

Since New Mexico became a part of the United States by the formation of her Territorial government, she has never failed to give a prompt response to the nation's call for soldiers. The loyalty and patriotism of the people of New Mexico can not be successfully questioned in view of her war record.

THE INDIAN WARS.

In the early history of the Territory the frequent Indian outbreaks were a source of great danger and distress in the West. New Mexico had her full share of suffering from this cause.

The large number of Indian depredation claims now in progress of adjudication by the Government affords some idea of the destruction of property by the Indians, but numerous graves, to be found in all parts of the Territory, testify to the loss of human lives and the valor of her native people. Happily those days of death and destruction are gone, and gone forever, by reason of the wise and humane policy of our Government toward the Indians.

In those early wars New Mexico rendered material assistance to the Government by organizing and equipping her militia and sending them

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into the field, where they rendered valuable services in subduing those savage tribes. Several thousands of the citizens of the Territory served as soldiers during those Indian wars, but I regret that, owing to primitive methods of keeping records in those early days, it is impossible for me to give an accurate list either of those engaged or of those who fell in those wars.

THE CIVIL WAR.

In the war between the States, commonly called the war of the rebellion, New Mexico responded promptly, and, according to the records, sent into the field in defense of the Union 6,561 soldiers, a large majority of whom were natives. Four thousand four hundred and thirty-two of these were enlisted for three years; they were engaged at Valverde, Glorietta Mountains, San Augustine, Peralta, and other battles, and 277 of them were killed in battle or died from wounds and other causes.

Many citizens of New Mexico entered the Union Army in other regiments and at other places, so that the records do not show the entire number of soldiers furnished by the Territory. I fully believe, from investigation, that New Mexico furnished about 9,500 soldiers to the Union Army during the civil war, or about 10 per cent of the entire population of the Territory, and none at all to the Confederate army, so far as I am able to ascertain.

THE SPANISH-AMERICAN WAR.

When war was declared between the United States and Spain, New Mexico was alive with enthusiasm. A telegram from the War Department authorizing the enlistment of a squadron, or four troops, of cavalry for the First United States Cavalry was received by me on the 25th day of April, 1898, and on the 6th day of May following the entire number was mustered in in accordance with the call, and they left Santa Fe on the following day, May 7, for the concentration camp at San Antonio, Tex. Later a call was received for 100 more men from New Mexico for the same regiment, and they were recruited, mustered in, and went to the front within ten days after the call was received.

For this regiment, now familiarly known as "Roosevelt's Rough Riders," New Mexico furnished about 500 officers and men. A large majority of these were young men, many of them being under the age of 21 years, and were recruited from all the walks of life. Among them were many college students, business men, clerks, ranchmen, cowboys, miners, etc. Most of them were accustomed to the saddle and capable of being ideal cavalry soldiers. These men, with their regiment, participated in the battle of Las Guasimas, and the daring charge and capture of San Juan Hill, near Santiago de Cuba, and their deeds of valor, now known to the nation and the civilized world, will in future form one of the brightest pages in our military history.

Still another call was received from the War Department for four companies of infantry to form a part, or one battalion, of a regiment called the Arizona-New Mexico-Oklahoma-Indian Territory United States Volunteer Infantry. Within a very few days after this call was received the 15 officers and 424 noncommissioned officers and privates left New Mexico for Whipple Barracks, Ariz. These four com-

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panies were recruited at four of the principal cities of the Territory—Santa Fe, Las Vegas, Albuquerque, and Las Cruces. Men from all parts of the Territory enlisted in them, and these soldiers were composed of robust and enthusiastic young men who are creditable alike to the Territory and the nation.

More men responded under each call than were required to fill our quota, and in their eagerness to serve their country it is estimated that 150 enlisted in the Regular Army and in regiments from the States, and some of whom are now with the army in the Philippine Islands. Thus, New Mexico has furnished 1,089 soldiers for the late war, and would and could have furnished many more had the opportunity been afforded us.

In the last call made by the President for ten additional regiments New Mexico furnished 121 men for service in the Philippines and stands ready to-day to furnish her proportion whenever needed or called upon by the President.

REPORT OF THE BUREAU OF IMMIGRATION.

SIR: During the year ending September 1, 1899, the bureau of immigration has been reorganized and its office removed from Albuquerque to Santa Fe.

The bureau as at present organized consists of L. Bradford Prince, Rio Arriba County, president; Frank Springer, San Miguel County, vice-president; F. Lowenthal, Bernalillo County, treasurer; W. A. Hawkins, Otero County; C. A. Campbell, Eddy County; and Max. Frost, Santa Fe County, secretary.

A commodious office has been rented at Santa Fe and neatly furnished, and the secretary has under the instructions of the bureau commenced to make a collection of mineral specimens from various parts of the Territory for the purpose of keeping a permanent exhibit in Santa Fe for the inspection and investigation of capitalists, mining promoters, and miners.

During the year ending September 1, 1899, 1,228 letters written by persons in the United States, Canada, and some coming from England and Germany, asking information concerning the climate, resources, development, and general condition of New Mexico, have been received and answered, and in each case pamphlets descriptive of New Mexico and its agricultural possibilities, of its mineral wealth, of its magnificent climate, its people, its schools, its higher educational institutions, and, in fact, everything connected with New Mexico have been sent to the writers of these letters. Numerous marked copies of New Mexico papers containing write-ups descriptive of our Territory have also been so mailed.

The supply of these pamphlets printed during the year 1898 is exhausted, and the bureau officers now have under work and in course of process new descriptive matter of the Territory, which when completed and printed will show the latest development and material condition of New Mexico up to the present writing.

In addition to the publications of the bureau during the past year the bureau ordered and paid for 1,000 extra copies of the report of the governor, Miguel A. Otero, made to the honorable Secretary of the Interior, for the year 1898. Every copy has been distributed, and there is now on hand over 500 requests for the report of the governor to be submitted to the Secretary of the Interior and to be printed for the current year. The reports of the governor are in great demand and have proven to be most valuable and comprehensive works of reference for the Territory.

Respectfully submitted.

MAX. FROST,
Secretary Bureau of Immigration, Territory of New Mexico.

Hon. M. A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

NEW MEXICO PENITENTIARY,
Santa Fe, N. Mex., September 1, 1899.

SIR: In accordance with your request I have the honor to herewith submit report of the condition of the New Mexico Penitentiary as follows, to wit:

On May 1, 1899, there were confined in the penitentiary 192 convicts, of which

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number 37 are sentenced to life imprisonment, 4 for ninety-nine years, 2 for ninety years, and 1 for sixty years. Since May 1 to the present time, September 1, 1899, 19 prisoners have been received, 26 have been discharged, and 2 have escaped.

DISCIPLINE.

The discipline and behavior of the prisoners is and has been entirely satisfactory to the management. They are, as a rule, well behaved, obedient, and willing to perform such labor as may be assigned to them.

PUNISHMENT.

In the matter of punishment some changes have been made, the "dark cell" and stringing up by the hands having been abolished. The board of penitentiary commissioners at their July meeting adopted the "spanking" system which was inaugurated by Warden Hoyt, of the Colorado Penitentiary. This system has worked admirably, and has reduced the number of punishments at least 75 per cent. No convict has so far given cause for being punished the second time after having had a trial dose administered under the above system. It seems that it is not so much the physical punishment that has proven effective, but rather the humiliation, which seems to have a very decided moral effect upon the prisoners. The penitentiary physician is always present when punishments are administered. Authorities of considerable experience seem to share the view that this is the most humane and effective way to maintain discipline and exact compliance to the rules and regulations of the institution. For minor offenses other punishments are inflicted—taking away a ration of tobacco, the locking up in their cell in solitary confinement for a day, or perhaps a reprimand, as the nature of the case may require—the main object of the management being to maintain discipline and the strict compliance with the rules and regulations as set forth by the board of penitentiary commissioners, with as few punishments as possible, upon the theory that prisoners are sent here for the purpose of reform rather than persecution.

EMPLOYMENT.

All of the prisoners are kept continuously employed. Out of the aforesaid number an average of about 45 have been employed daily assisting in the construction of the Territorial capitol building; an average of which 5 have been employed as stonecutters, 2 to 4 as bricklayers, some as carpenters, others as laborers, and have given general satisfaction in the discharge of their respective duties. An average of about 12 have been employed during the last seventy days making ditches and laying sewer-pipe system for the city of Santa Fe, the same having been completed a few days ago. The above labor is required by the Territorial law to be furnished free of cost, and therefore no revenue has accrued therefrom to the credit of this institution. The balance of the prisoners are kept employed in different lines of occupation inside of the penitentiary grounds, as follows: In the bakery, 3; in the kitchen, 11; in the dining room of the superintendent, 1; in guards' dining room, 1; as bell boy, 1; as carpenters, 3; blacksmith shop, 5; laundry, 9; in the cell house, 4; barbers, 4; as druggist, 1; boiler house, 2; shoemakers, 4; tailors and repairers, 15; painters, 2; hostler, 1; teamsters and helpers, 5; power-house, 5; gardeners, 3; limekiln, 3; stonecutters, 14; stone breakers, 3; carrying water, 1; attending hogs and poultry, 2; greenhouse, 1; front yard, 1; scavengers, 1; partly insane, 1; incapacitated, 1; in the hospital, 5; gate man, 1; bricklayers, 6; balance as laborers in the yard; tin shop, 1.

IMPROVEMENTS.

The following is a partial list of improvements made and under construction during the past four months:

One line of steam pipe from power house to well, a distance of 300 feet, one 4-inch Knowles pump, 4-inch pipe from well to tank, cost of pump and material $500; also 675 feet of 3-inch pipe now being laid for the purpose of making connection with the water main and reservoir in order to insure a constant and sufficient water supply; ten new institution iron spring beds for hospital, new water-closet for the same, one operating table, ten hospital bedside tables, closets for sheets, bureau, etc., painting and renovating hospital, approximate value including 675 feet of pipe, $1,000; renovating and painting, etc., main office, superintendent's office, physician's office, superintendent's dining room, quarters for employees, total cost approximately, $200; tinner's outfit for tin shop $250; value of tinware, ironware, etc., manufactured by convict labor, cost of the same in the open market, exclusive of material as a basis, will amount to $500; one modern brick-

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kiln now under construction, when completed will burn 300,000 brick at a burning and have a cash value of $1,500; a complete brick outfit has been purchased from C. W. Raymond & Co., of Dayton, Ohio, upon which a cash payment of $1,995 has been made, total cost of which will amount, including freight, to $5.000. The above will include machinery for the manufacture of common, repress, and sidewalk brick. Work is also being carried on in the erection of an additional cell house.

COST OF MAINTENANCE.

The actual cost of feeding the prisoners during the past four months has been as follows: May, 14.9 cents per day per man; June, 15.18 cents per day per man; July, 14.25 cents per day per man; August, 14.12 cents per day per man.

Cost of beef, $7.28 per hundredweight; flour, $1.82 per hundredweight.

Financial condition September 1, 1899.

CONVICT'S EARNINGS.

Total amount received from March 1, 1899, to September 1, 1899	$3,064.13
Total disbursed during above period	1,063.69
Balance on hand	2,000.44

GENERAL EXPENSE FUND.

Total amount received by apportionments of appropriation for the fiftieth fiscal year, March 1, 1899, to September 1, 1899	$23,058.00
Disbursed during above period	14,038.39
Balance on hand	9,019.61

PENITENTIARY SALARY FUND.

Total amount received by apportionments of appropriation for the fiftieth fiscal year, March 1, 1899, to September 1, 1899	$6,835.03
Disbursed during the above period	4,776.62
Balance on hand	2,058.41

RECAPITULATION.

Total received from all sources	$32,957.16
Total disbursements	19,878.70
Total on hand	13,078.46

Respectfully submitted,

H. O. BURSUM, *Superintendent.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

LAS VEGAS, N. MEX., *September 1, 1899.*

SIR: We take pleasure in submitting herewith reports of the medical superintendent and steward of the asylum for the year ending June 30, 1899. You will notice that they cover all the points very thoroughly and leave little for us to add

The last legislature gave us a levy of 1 mill, which is an increase of one-quarter of a mill over the present levy.

We will not, however, begin to derive the benefit from this increase until next year, and in the meantime, with the increase in patients and the additional expense that naturally follows, we are running very close with regard to our finances. In our report to the legislature we requested them to give us a special levy for the improvement of the administration building, with the view of devoting more of it to the accommodation of the better class of patients, but our request was not granted, owing no doubt to the large number of demands made upon them and to their feeling the necessity of holding the expenditures down to the lowest possible notch. It is unfortuuate, however, that we have not the funds to put this building in better condition, and our hope at this time is that the increased levy of next

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year will be large enough to enable us to make these improvements after taking care of the usual running expenses. We submit the reports herewith without further comments on our part.

Respectfully,

J. W. ZOLLARS,
MARCUS BRUNSWICK,
FRANK CROSSON,
BENIGNO ROMERO,
F. H. PIERCE,
Directors.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

LAS VEGAS, N. MEX., *July 1, 1899.*

SIRS: In compliance with your request I beg leave to make the following report for the year ending June 30, 1899:

The number of patients remaining in the asylum June 30, 1898, was 57, of which 33 were males and 24 females. During the year there have been 45 admissions, of which 27 were males and 18 females.

A total of 102 patients have been treated during the year. The average daily attendance for the year has been 77. The number of discharged has been 15, as follows:

Cured	2
Improved	4
Unimproved	1
Died	8
Total	15

The causes of death have been as follows:

Inanition	2
Chronic diarrhea	1
Cerebral hemorrhage	1
Ptomaine poisoning	1
Maniacal exhaustion	2
Epilepsy	1
Total	8

The total number of patients remaining in the institution June 30, 1899, are 91, of which 52 are males and 39 are females, classified as follows:

Acute mania	2
Chronic mania	24
Dementia	57
Epileptic insanity	5
Insanity of adolescence	2
Moral insanity	1
Total	91

By referring to the above table you will notice that there has been but little, if any, change in the class of patients compared with my last report, in that the greater number of them are hopelessly incurable, most of them having been confined in the damp, dark, and ill-ventilated county jails for years without adequate care and treatment before admission to this institution. This will account for the small number discharged as cured.

Since the last fiscal report the new buildings have been completed, this has made a great change for the better in the treatment and care of our unfortunate insane. The entire new addition is well heated and ventilated and is lighted by electricity. The new part was ready for the reception of patients September 1, 1898.

The health of the inmates has been very good during the year just past. there having been no epidemics among them. Though the number of patients allowed each county was doubled in August, 1898, and since then the quota of many counties has been filled mostly by chronics and incurables, leaving but little or no room for recent cases, and it is from the latter class of patients that we may reasonably expect a very large per cent of recoveries if placed early under favorable surroundings and appropriate treatment. Of the patients remaining in this institution

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June 30, 1899, 74, or over 81 per cent, may be classed as incurable. It can be safely estimated that there are about 200 insane persons in the Territory of New Mexico, or one to every thousand of population.

While the year just passed has witnessed many improvements in and about the institution, we must not be unaware of the fact that we have not yet reached that degree of perfection which we would desire: many things remain to be done; many anticipations to be realized. The one thing we should keep prominently in view is that this is a hospital for the treatment of the insane rather than a home for the accommodation of incurables. There being a limited amount of room, we should at least limit the number to be admitted of those that are manifestly hopeless. If there were sufficient room it would not be necessary or desirable to deny admission to any, but as there is not these discriminations should be made in favor of recent and presumably curable cases. If this discrimination is not made, in a very short time the hospital will be entirely filled with chronics and incurables, and then those who might be benefited by hospital residence and treatment will be permanently excluded and they, in turn, swell the already too large number of the most pitiable of human beings. This policy would, in individual cases, seem to work a hardship, but when considered from the broad view of accomplishing the greatest amount of good for the very limited amount of money at our disposal, it must be considered as correct and should be adopted.

Besides the improvement in buildings, there has been much work done on the yard and garden in grading and terracing, a system of sewerage, planting of fruit and shade trees, as well as of shrubbery and many flowers of different varieties: most of the labor having been done by the patients, all of which have afforded healthful occupation to a number of the inmates, besides lending a more attractive appearance to the grounds and comfort to the unfortunates, and the garden has afforded a great abundance of delicious vegetables which have materially reduced the cost of maintenance of the institution. Not only have the patients been employed by outside work, but they have been occupied also inside by sweeping, scrubbing, doing dining-room and laundry work. The female patients have been engaged in household duties, sewing, and fancy work, according to individual capacity. At all times much care is observed not to overtax any patient.

Much the greater number of patients are idle because their mental and physical condition renders them incapable of doing any kind of work. When the weather permits the inmates are allowed a daily walk outside the hospital grounds, and every month dancing, music, and other entertainments are allowed much to the enjoyment of the patients.

The present available room, principally in the new addition, will accommodate about one hundred persons, and twenty more may be afforded adequate quarters as soon as we can have the old building renovated. The old building, known as the administration building, is now almost uninhabitable because of its being out of repair. For about five years this part of the institution has been very much overcrowded, literally filled from cellar to attic, and during this period but little repairing has been possible. The floors, doors, and much of the other woodwork must be put in new, partition walls changed, almost if not all of the building must be replastered, fixtures and plumbing in great part replaced in toilet and bath rooms, many changes and repairs and renovations are most urgently needed to meet the present demand.

During the meeting of our legislature last winter strenuous efforts were made to secure a special appropriation sufficient to make the above-mentioned repairs but I am sorry to say we were disappointed.

We have at present about 6 acres in garden and 3 acres in alfalfa, cared for by some of the few male patients capable of doing manual labor, the returns of which make a very noticeable reduction in our running expenses. We are now feeling, more than ever before, the lack of sufficient land for garden and farming purposes, and will feel this need still more in the early future. If an additional tract of land, under irrigation, though small, could be placed at our disposal enough could be produced at a very slight expense to keep many hogs, poultry, and more milch cows, and beef might be grown and fattened, which would further diminish the running expenses of the plant.

I will presume to suggest that measures be taken to secure not less than 60 acres more land under ditch.

Very respectfully,

W. R. TIPTON,
Medical Superintendent.

The BOARD OF DIRECTORS OF THE INSANE ASYLUM OF NEW MEXICO.

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LAS VEGAS, N. MEX., *August 15, 1899.*

DEAR SIR: I have the honor to submit the following report of the transactions of the department under my charge of the insane asylum of New Mexico from November 1, 1898, to June 30, 1899:

The average daily attendance of patients was 77.

Number of meals furnished, 55,902.

Total cost of food supplied consumed, $2,700, making cost per meal, 4.83 cents; cost per day, 14.49 cents; per month, $4.38½; for the eight months above mentioned, $35.06½, or an average yearly cost for each patient of $52.59¾.

The hospital for the insane has about 19 acres of land, 6 of which are being used in the cultivation of a vegetable garden, 3 acres are in alfalfa, the remainder being used for parks and pasture.

Five hundred and twenty-two shade trees were set out last spring taken from the hospital nursery.

A number of patients have been taught to cultivate the garden truck and 50,000 to 60,000 pounds of various kinds of vegetables adapted to this section of the country are yearly grown on these grounds, portions of which are consumed by the patients and the balance fed to stock.

The grading and excavating of the grounds is being continued daily and we hope soon to have the entire grounds in good shape.

The prospect for a good crop of vegetables this season is excellent.

Respectfully submitted.

G. W. WARD, *Steward.*

The PRESIDENT OF THE BOARD OF DIRECTORS
OF THE INSANE ASYLUM OF NEW MEXICO.

TAOS, N. MEX., *August 1, 1899.*

SIR: I have the honor to submit the following report for the New Mexico Territorial board of health.

HISTORICAL NOTE.

In 1882 there was adopted by the legislature of New Mexico, and approved, a statute regulating the practice of medicine, its details resembling the then existing statute of Illinois; but being unsatisfactory to the medical profession, and adversely criticised by the bar, various futile efforts were made by the New Mexico Medical Society to secure a better statute. In September, 1894, the Territorial board of medical examiners, in session at Albuquerque, appointed a committee of three of its members, who, with the president of the board, and the president of the New Mexico Medical Society, should prepare a bill looking to a better statute. In January, 1895, such a bill was ready, and having met the approval of a majority of the board, and of the officers of the New Mexico Medical Society, was presented to the legislature then in session. It became a law, but in its passage received several unnecessary alterations, which are indicated in this reprint by the sentences in italics. An attempt was made in drafting this bill to utilize the best materials from kindred statutes throughout the United States, as well as our own considerable experience.

AN ACT to regulate the practice of medicine and to establish a Territorial board of health in the Territory of New Mexico. Approved February 27, 1895.

Be it enacted by the legislative assembly of the Territory of New Mexico.

SECTION 1. Qualifications for practice: That no person shall practice medicine in any of its departments in this Territory unless such person possesses the qualifications required by this act. If a graduate in medicine, he must present his diploma by mail or in person to the Territorial board of health for verification as to its genuineness.

If the diploma is found genuine, and from a legally chartered medical institution in good standing, and if the person named therein be the person claiming and presenting the same, the Territorial board of health shall issue a certificate to that effect, signed by all the members thereof, and such certificate shall be conclusive as to the right of the lawful holder of the same to practice medicine in this Territory. If not a graduate, the person practicing medicine in this Territory shall present himself before said board and submit himself to such examination as the board may require, and if the examination be satisfactory to the board, the said board shall issue its certificate in accordance with the facts, and the lawful holder of such certificate shall be entitled to all the rights and privi-

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leges herein mentioned: *Provided*, That any person who shall have practiced medicine continuously for the period of ten years in this Territory prior to the passage of this act shall be entitled to a license or certificate without examination, upon the payment of the fee for such license or certificate.

SEC. 2. Territorial board of health—Organization: That a board is hereby established which shall be known under the name and style of the "New Mexico Territorial Board of Health," to be composed of seven practicing physicians of known ability and integrity, who are graduates of medical schools of undoubted respectability, and holding licenses to practice in this Territory, giving each of the three schools of medicine (known as the regular, homeopathic, and eclectic schools) a representation, as follows, to wit: Four physicians of the regular, two of the homeopathic, and one of the eclectic school or system of medicine. The members of this board shall be appointed by the governor, and shall hold their office two years, and all vacancies shall be similarly filled as soon as the governor is notified thereof by the secretary of the board.

The Territorial board of health shall organize within three months after the passage of this act; it shall procure a seal, and shall receive through its secretary applications for certificates and examinations; the president and secretary shall have the authority to administer oaths, and the board shall take testimony in all matters relating to its duties; it shall issue certificates to all who furnish satisfactory proof of having received diplomas or licenses from legally chartered medical institutions in good standing, as may be determined by the board. Applicants for certificates, being graduates, or to all who now have licenses to practice in the Territory, issued by the present or former board of medical examiners, shall pay a fee of five dollars to the secretary of the board, who shall turn the same into the treasury of the board.

SEC. 3. Verification of diploma—Affidavit: The verification of the diploma or certificate shall consist in the affidavit of the holder and applicant that he is the lawful possessor of the same, and that he is the person therein named; and any person swearing falsely shall be deemed guilty of perjury and shall be punished accordingly.

SEC. 4. Examinations by board: All examinations of persons not graduates or licentiates shall be made directly by the board, and may be made in whole or in part in writing, and shall be of an elementary and practical character, sufficiently strict to test the qualifications of the candidate as a practitioner. The fee for examination shall be twenty dollars, and said fee shall be paid into the treasury of the board.

SEC. 5. County clerk to record: Every person holding a certificate from the Territorial board of health shall have it recorded in a book provided for the purpose in the office of the clerk of the county in which he resides, within three months from its date, and the date of recording shall be endorsed thereon; he shall then be entitled to practice in any part of the Territory, but must again record his certificate in case of removing his permanent residence to another county.

SEC. 6. Refusal or revocation of certificate: The Territorial board of health must refuse to issue certificates to individuals guilty of unprofessional or dishonorable conduct, and it may revoke certificates for like causes.

SEC. 7. Definition of "to practice medicine:" For the purposes of this act, the words "practice medicine" shall mean to investigate or diagnose, or offer to investigate or diagnose, any physical or mental ailment of any person, with a view to affording relief, as commonly done by physicians; to suggest, recommend, prescribe or direct, for the use of any person, any drug, medicine or appliance, apparatus or other agency, whether material or not material, for the cure, relief, or palliation of any ailment or disease of the mind or body, or for the cure or relief of any wound, fracture, or bodily injury or deformity, after having received, or with the intent of receiving therefor, either directly or indirectly, any bonus, gift, or compensation: *Provided*, This act shall not prevent people who are entitled to sell medicine under the laws of this Territory from recommending the same; but nothing in this act shall be construed to prohibit gratuitous service in cases of emergency, or the domestic administration of family remedies, or women from practicing midwifery; and that this act shall not apply to surgeons in the service of the United States in the discharge of their official duties.

SEC. 8. Penalty for practicing without certificate—Using another's diploma: Any person practicing medicine or surgery in this Territory without the certificate issued by this board, in compliance with the provisions of this act, shall, for each and every instance of such practice, forfeit and pay to the Territory of New Mexico, for the use of the said Territorial board of health, the sum of one hundred dollars for the first offense and two hundred dollars for each subsequent offense, the same to be recovered in an action of debt before any court of compe-

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tent jurisdiction; and any person filing, or attempting to file, as his own, the diploma or certificate of another, or a forged affidavit of identification, shall be guilty of a felony, and, upon conviction, shall be subject to such fine and imprisonment as are made and provided by the statutes of the Territory for the crime of forgery.

SEC. 9. Judgment upon conviction—Appeal: Upon conviction of either of the offenses mentioned in this act, the court shall, as part of the judgment, order that the defendant be committed to the common jail of the county until the fine and costs are paid, and, upon failure to pay same immediately, the defendant shall be committed under said order: *Provided*, That either party may appeal in the same time and manner as appeals may be taken in other cases, except that where an appeal is prayed in behalf of the Territory no appeal bond shall be required to be filed, whether the appeal be from a justice of the peace, or from the district, county, or circuit court, or from the appellate court, but it shall be sufficient in behalf of the Territory of New Mexico for the use of the Territorial board of health to pray an appeal, and thereupon appeal may be had without bond (or) security.

SEC. 10. Solicitor-general and district attorneys to prosecute: It shall be the duty of the solicitor-general and the district attorneys to prosecute any and all persons who shall be guilty of violating the provisions of this act.

SEC. 11. Repeal: All laws and parts of laws in conflict with the provisions of this act are hereby repealed, and this act shall be in force and effect from and after its passage.

Since the passage of the foregoing act there has been 137 physicians licensed by the board.

The board does not recognize diplomas from medical schools that do not require a four-year high-school course or its equivalent before matriculation, and four years' course of study, no two courses of lectures the same year.

All applicants with diplomas from medical colleges below this standard must pass a satisfactory examination.

All foreign diplomas must be supplemented by an examination.

All applicants must furnish satisfactory evidence of good moral and professional standing.

Three licenses have been revoked for unprofessional and dishonorable conduct.

The only duties of this board are to carry out the provisions of law regulating the practice of medicine, and it has no authority in other matters of public health.

The medical board should be empowered by an act of the next legislature to pass all necessary rules and regulations in regard to public health—particularly of our larger towns and cities—restrict and quarantine cases of epidemic disease. It should have power and funds, when necessary, to enforce a rigid quarantine.

The following resolution was passed by the board at its meeting June 19, 1899:

"Examinations will be required of all applicants to practice medicine in New Mexico who shall graduate after July 1, 1897, from any medical college which does not require of matriculants, as a minimum evidence of sufficient general education, a high-school certificate or its equivalent, and, for graduation, proof of four years' study of medicine and four terms of lectures occurring in four separate years.

"The previous standard of three years' study and three terms of lectures in three separate years, with the preliminary requirement of matriculants of a high-school certificate or its equivalent, will be maintained for all applicants who graduated between July 1, 1890, and July 1, 1897.

"According to a resolution of the New Mexico Territorial Board of Health, adopted April 24, 1899, each applicant must furnish, as references regarding moral character and professional standing, two or more names of reputable physicians, preferably the president and secretary of state licensing board, or president and secretary of State medical society of State where applicant last resided."

Respectfully submitted.

T. P. MARTIN, M. D., *Secretary.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

BOARD OF PHARMACY.

I have the honor of submitting herewith the ninth annual report of the New Mexico Board of Pharmacy, to December 1, 1898. On account of the limited amount of funds at the disposal of the board, the reports have usually been confined to a typewritten document to the governor only. This report is intended

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to be more complete, and embraces about all that is of interest to the pharmacists of the Territory, showing as it does the work of the board, with a complete financial statement and a list of registered pharmacists, minor pharmacists, and temporary certificates; also, a copy of the original pharmacy law, with its amendments, and the poison law.

The condition of pharmacy in our Territory is apparently better than at any time since the law was enacted, and the druggists seem to understand and observe the law more closely. No instance of open or intentional violations of the law have been brought to the notice of the board, and the few minor irregularities have been satisfactorily corrected without the necessity of resorting to the expense or annoyance of a suit.

The board is pleased to observe that the standard of our profession in New Mexico is gradually assuming a position equal to that of any of the States, and desires to express its appreciation of the earnest support and assistance rendered by the pharmacists of the Territory.

The meetings of the board have been held semiannually, as the law provides, except in a few instances when the funds were insufficient to defray the expenses. The minutes of the meetings are not of sufficient interest to warrant their publication in this brief report, but they are open to inspection at any time to anyone interested.

Examinations are conducted, both oral and written, and it is the policy of the board to thoroughly test the practical ability of the applicant, and to maintain a standard equal to that of any of the older State boards.

During the year 1898 two meetings have been held. One at Silver City on March 20 and 21, and one at Albuquerque on October 5 and 6.

At Silver City there were four applications on file, but only one candidate being present for examination, viz, J. E. Irvine, Deming, who was successful.

At the meeting in Albuquerque six applications were on file. The following passed successful examinations: Robert Mann, Albuquerque; Chris Christensen, Albuquerque; Mrs. Emily K. Hilton, Socorro.

Aside from the above twelve have been registered on diplomas and credentials from other State boards.

It is to be regretted that the New Mexico Pharmaceutical Association does not receive more earnest support. This association was temporarily organized in 1893, and at a subsequent meeting held at the San Felipe Hotel, Albuquerque, September 20, 1894, a permanent organization was effected, but on account of lack of attendance and interest no meeting has been held since the latter date.

It is desirable that this association should be perpetuated, not only for educational and commercial benefits, but as an assistant and stimulant to the board of pharmacy.

In most of the States the pharmaceutical associations recommend or nominate the appointees for membership of the pharmacy boards, and in this way our association could assist in the selection of, or recommend to the governor, the names of such as would be most satisfactory or best qualified for appointment.

Respectfully submitted.

W. C. PORTERFIELD,
Secretary and Treasurer.

LIST OF MEMBERS OF THE BOARD, WITH DATE OF EXPIRATION OF TERM FOR WHICH THEY WERE APPOINTED.

Bernardo Ruppe, Albuquerque; term expires March 19, 1903.
E. G. Murphy, Las Vegas; term expires March 19, 1902.
W. C. Porterfield, Silver City; term expires March 19, 1901.
M. G. Paden, White Oaks; term expires March 19, 1900.
A. J. Fischer, Santa Fe; term expires March 19, 1899.

FINANCIAL STATEMENT.

1898.

Mar. 20.	Balance on hand last report	$196.20
Nov. 1.	70½ renewal fees	141.00

DUTIES OF THE SECRETARY.

It shall be the duty of the secretary to attend all meetings of the board, and make a full record of the proceedings of the same; he shall keep a book of registration, in which shall be entered the names and places of business of all persons registered under the pharmacy law; also specify such facts as said persons shall

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claim to justify their registration. The secretary shall prepare all certificates ordered by the board, and shall notify each member by mail of the meetings of the board, and do such other clerical work as the board may direct; he shall give such bond, to be approved by the board, as the board may from time to time direct.

He shall keep a full account of all moneys received and disbursed, and specify for what purposes, and make a full report of receipts and disbursements and amount of cash on hand, at each regular meeting, or whenever it is demanded by the board.

MEETINGS.

The regular meetings of the board shall be held semiannually, as a majority of the board may direct, and at such place as they shall elect. Upon the written application of three members of the board the president shall call special meetings of the board, and shall cause notice thereof to be given to each member at least seven days in advance of such meeting.

STANDING COMMITTEES.

The committee on complaints and grievances: The duties of the committee on complaints and grievances shall be to carefully examine into all complaints and grievances made to the board pertaining to the violation of the pharmacy law, except adulterations and the sale of poisons. All such complaints and grievances shall be referred to said committee and a written report submitted thereon.

COMMITTEE ON ADULTERATIONS AND POISONS.

The duties of the committee on adulterations and poisons shall be to carefully examine into all complaints made to the board pertaining to violations of the pharmacy law in regard to adulterations and the sale of poisons; and all such complaints shall be referred to said committee, and a written report made thereon, before an analyst or chemist can be employed, or any prosecution shall be ordered by the board.

COMMITTEE ON AUDITING AND FINANCE.

The duties of the committee on auditing and finance shall be to carefully examine into all claims presented to the board for payment and to report upon the correctness and allowance of the same; to examine the books and accounts of the secretary and treasurer, and make recommendations as to the manner and form in which such books and accounts shall be kept; to report at the regular meetings of the board upon the condition of the books and accounts of the secretary and treasurer, the amount of receipts and expenditures for the fiscal year, and the amount of cash on hand.

RULES.

Rule 1.—Any member of the board may, upon presentation of credentials or other satisfactory evidence of capability, grant a temporary certificate, which shall expire at the next meeting of the board. It shall also be the duty of any member of the board, in his respective district, to see that all practicing pharmacists renew their annual certificates; and that they have a general supervision over their districts, respectively, and shall report all infractions of the law to the board and their action taken in behalf of the same.

Rule 2.—Registered pharmacists who change their location must report the same within ten days, giving their present address to the secretary.

Rule 3.—Proprietors of pharmacies not registered themselves, who conduct pharmacies under charge of a registered pharmacist, must report any change they may make in said registered pharmacist within ten days after such change occurs.

Rule 4.—This board will recognize certificates issued by other State boards which have been granted by examination, wherein a grade of at least 75 per cent has been attained and a practical experience of at least three years is required. A certificate from the secretary of such board to that effect must accompany the application.

Rule 5.—This board recognizes diplomas from an incorporated college or school of pharmacy that requires a practical experience in pharmacy of not less than three years before granting a diploma.

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NEW MEXICO PHARMACY LAW.

[Compilation of 1897.]

SEC. 3717. That from and after the passage of this act it shall be unlawful for any person, not a registered pharmacist within the meaning of this act, to conduct any drug store, pharmacy, apothecary shop, or store for the purpose of retailing, compounding, or dispensing medicines in the Territory of New Mexico, except as hereinafter provided.

SEC. 3718. That it shall be unlawful for the proprietor of any such store or pharmacy to allow any person except a registered pharmacist to compound or dispense the prescriptions of physicians except as an aid to and under the supervision of a registered pharmacist. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction shall be liable to a fine of not less than five nor more than one hundred dollars.

SEC. 3719. The governor shall appoint five persons, all of whom shall have been residents of the Territory for three or more years and of at least eight years' practiced experience as druggists or pharmacists, who shall be known and styled the Board of Pharmacy for the Territory of New Mexico, one of whom shall hold the office for five years; one for four years; one for three years; one for two years; one for one year in the first instance, and thereafter the governor shall annually appoint one person to serve as a member of the board for five years. The persons so appointed shall constitute the board of pharmacy, and shall hold the office for the term for which they were appointed, or until their successors are duly appointed and qualified. They, the said board, and each of them, shall, within ten days after their appointment, or being apprised of the same, take and subscribe the usual official oath before a properly qualified officer of the county in which they reside. The said board shall organize within thirty days from and after their appointment and annually thereafter by the election of a president and secretary. A majority of the board shall constitute a quorum for the transaction of business. Said board shall have the power to make by-laws and all necessary regulations for the proper fulfillment of their duties under this act without expense to the Territory. Any vacancy occurring in said board shall be filled by an appointment by the governor for the unexpired term.

SEC. 3720. The board of pharmacy shall register in a suitable book, a duplicate of which shall be kept in the office of the secretary of the Territory, the names and places of residence of all persons to whom they issue certificates and the dates thereof. It shall be the duty of said board of pharmacy to register, without examination, as registered pharmacists, all druggists and pharmacists who are engaged in business in the Territory of New Mexico at the passage of this act, as owners, principals, or clerks of stores for retailing, compounding, or dispensing drugs, medicines, or chemicals for medical use, or for compounding and dispensing physicians' prescriptions: *Provided*, No druggist's clerk shall be so registered unless he be eighteen years of age and has been engaged in some store or pharmacy where physicians' prescriptions were compounded and dispensed, for the space of three years next preceding the passage of this act. In case of the failure or neglect of any person to apply for registration within sixty days after the organization of the said board of pharmacy, he shall have forfeited the privilege of registering without examination, and shall only be registered after examination as set forth in section three thousand seven hundred and twenty-one.

SEC. 3721. That the said board of pharmacy shall upon application, and at such time and place and in such manner as they may determine, examine each and every person who shall desire to conduct the business of selling at retail, compounding and dispensing drugs, medicines, or chemicals for medical use, or compounding or dispensing physicians' prescriptions as pharmacists in the Territory of New Mexico, and if a majority of said board shall be satisfied that said person is competent and fully qualified to conduct said business of compounding or dispensing drugs, medicines, or chemicals for medical use, or to compound and dispense physicians' prescriptions, they shall enter the name of such person, as a registered pharmacist, in the book provided for in section three thousand seven hundred and twenty: *Provided*, That all graduates in pharmacy having a diploma from an incorporated college or school of pharmacy that requires a practical experience in pharmacy of not less than three years before granting a diploma may, in the discretion of the board be entitled to have their names registered as registered pharmacists by said board, without examination. The board of pharmacy shall issue an appropriate certificate to each person registered, which certificate must be conspicuously displayed in every store or place described in this section. Said certificate must be renewed twelve months after each date of issue.

SEC. 3722. The board of pharmacy shall be entitled to demand and receive from

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each person whom they register and furnish a certificate as a registered pharmacist, without examination, the sum of two dollars, and for each and every person whom they examine the sum of five dollars, which shall be in full for all services. In case the examination of said person shall prove defective and unsatisfactory to the board and he be declined registration, he shall be permitted to present himself for reexamination within twelve months thereafter and no charge shall be made for such examination.

SEC. 3723. The board of pharmacy shall hold semiannual sessions at such times and places as the board may determine; other sessions of the board may also be held whenever and wherever a quorum of the board is present.

In the interim of the sessions of the board and upon satisfactory evidence of a fitness of an applicant, any one member of the board may, in his discretion, issue a temporary certificate, which shall authorize and empower the holder to conduct a drug store or pharmacy as set forth in section three thousand seven hundred and twenty-one. Such temporary certificate must be signed by one member, and shall expire and terminate at the date of the next succeeding semiannual session of the board after the granting thereof. No fee shall be demanded for the temporary certificate.

SEC. 3724. Every owner of a drug store in the Territory of New Mexico shall be held responsible for the quality of all drugs, chemicals, and medicines he may sell or dispense, with the exceptions of those sold in the original packages of the manufacturer or wholesale dealer, and also those known as proprietary medicines. And should he knowingly, intentionally, and fraudulently adulterate or cause to be adulterated such drugs, chemicals, or medical preparations, he shall be deemed guilty of misdemeanor, and upon conviction thereof his license as a registered pharmacist shall be thereby revoked, and in addition thereto be liable to a penalty not exceeding five hundred dollars.

SEC. 3725. Any person who shall procure or attempt to procure registration for himself or for another, under the act, by making or causing to be made false representations, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be liable to a penalty of not less than five and not exceeding one hundred dollars, and his name, together with the name of the person so registered, shall be stricken from the register.

SEC. 3726. Any person not a registered pharmacist as provided in this act who shall conduct a store, or a pharmacy, or place for retailing, compounding, or dispensing drugs, medicines, or chemicals, for medical use, or for compounding or dispensing physicians' prescriptions in the Territory of New Mexico, or who shall take, use, or exhibit the title of registered pharmacist, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, be liable to a penalty of not less than five nor more than one hundred dollars: *Provided further*, This act shall not apply to physicians putting up their own prescriptions, nor to the sale of patent proprietary medicines, nor to the sale of those articles commonly known as grocers' drugs, except those articles that are denominated poisons under the law known as the New Mexico poison law; nor to any regularly licensed physician of the Territory of New Mexico engaged in the drug business in towns or cities situated twenty miles or more from a regular licensed pharmacist engaged in the drug business.

SEC. 3727. If any registered pharmacist shall go out of the drug business, and remain out for a period of twelve months, his certificate as registered pharmacist shall thereupon expire.

SEC. 3728. All suits for recovery of the several penalties prescribed in this act shall be prosecuted in the name of the Territory of New Mexico, in any court having jurisdiction, and it shall be the duty of the prosecuting attorney of the county where such offense is committed to prosecute all persons violating the provisions of this act upon proper complaint being made. All penalties collected under the provisions of this act shall inure to the expense fund of the board which may occur.

SEC. 3729. It shall be the duty of the said board to grant to persons or merchants in towns or camps having no drug store, minor certificates without charge, as they may deem proper, to vend such medicines, compounds, or chemicals as are required by the general public: *Provided*, That this law is not to be so construed as to prevent ranchmen or miners not within reach of a store or place where drugs are sold, from dispensing medicines to their families or employés: *Provided further*, That it shall be the duty of the secretary of said board to render an accurate annual statement to the governor of the Territory of all moneys received and expended by said board during each year, and he shall also report upon the general condition of pharmacy throughout the Territory.

SEC. 3730. The meetings of the pharmacy board shall be opened to registered pharmacists who shall be permitted to be present at the examination of applicants for registration.

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SEC. 3731. Any member of the board of pharmacy who shall violate any of the provisions of this act, or who shall neglect or refuse to report any of the violations of the provisions of this act that may be within his knowledge, within ten days of the time said violation comes to his knowledge, shall be removed from office by the governor upon such showing as may be deemed satisfactory by the executive, and such vacancies shall be filled by the governor as now provided by law.

POISON LAW.

SEC. 1259. Every apothecary, druggist, or other person, who shall sell and deliver any arsenic, corrosive sublimate, prussic acid, or any other violent poison, without having the word "poison," and the true name written thereof, written or printed in Spanish and English, upon a label put upon the vial, box, or package that contains the same, shall be punished by a fine not exceeding one hundred dollars.

SEC. 1260. That hereafter it shall be unlawful for any person not a registered pharmacist to sell or dispense any poisons enumerated in Schedules A and B, except as approved by section fourteen of New Mexico pharmacy law, approved February 15, 1889. (Section 3726, Compiled Laws of 1897, quoted hereinbefore in pharmacy law.)

Schedule A.—Arsenic, mercury, strychnia, and their preparations of salts, acetate of lead, tartar emetic, cyanide of potassium, hydrocyanic acid, and all other poisonous vegetable alkaloids and their salts, essential oil of bitter almonds, opium and its preparations, except paragoric and such other preparations of opium containing less than two grains to the ounce.

Schedule B.—Aconite, belladonna, coca, colchicum, conium, nux vomica, henbane, savin, ergot, cotton root, cantharides, creosote, digitalis and their pharmaceutical preparations and alkaloids, croton oil, chloroform, chloral hydrate, sulphate of zinc, mineral acids, carbolic acid, and oxalic acid, without distinctly labeling the box, vessel, or paper in which the said poison is contained, with the name of the article, the word "poison," and the name and place of business of the seller; nor shall it be lawful for any person to sell or deliver any poison enumerated in Schedules A and B unless, upon due inquiry, it be found that the purchaser is aware of its poisonous character, and represents that it shall be used for a legitimate purpose; nor shall it be lawful for any registered pharmacists to sell or dispense any poisons enumerated in Schedules A and B without, before delivering the same to the purchaser, causing an entry to be made in a book kept for that purpose, stating the date of sale, the name and address of the purchaser, the name of the poison sold, the purpose for which it is represented by the purchaser to be required, and the name of the dispenser; such book to be always open for inspection by the proper authorities, and to be preserved for at least four years. The provisions of this act shall not apply to the dispensing of poisons in not unusual quantities or doses, upon the prescriptions of practitioners of medicine: *Provided*, Nothing in this act shall be so construed as to prevent the sale of such poisonous articles as are directly used in mining or for the reduction or concentration of ores.

SEC. 1261. Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction shall be fined in a sum not exceeding one hundred dollars, or by imprisonment in the county jail for not more than six months, or both, in the discretion of the court.

SEC. 1262. All fines recovered under the provisions of this act shall be paid to the treasurer of the Territorial board of pharmacy.

SEC. 1263. It shall be unlawful for any person to keep or maintain a place for the purpose of furnishing opium to others, or what is commonly known as a hop joint or opium joint: *Provided, however*, That the provisions of this section shall not, in any wise, apply to druggists who may dispense or sell the same upon the prescription of a physician.

SEC. 1264. Any person violating the provisions of the preceding section shall be deemed guilty of a misdemeanor, and upon conviction thereof before a justice of the peace, or the district court, or any competent tribunal shall be fined in any sum not less than twenty-five dollars nor more than two hundred and fifty dollars, or he shall be sentenced to imprisonment at hard labor, in the county jail, for a term of not less than one nor more than six months, or both said fine and imprisonment, in the discretion of the court or jury trying the case.

SEC. 1265. All fines imposed under the provisions of this act, one half shall go to the prosecuting witness and the other half to the treasurer for the benefit of the school district wherein the offense was committed.

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CAPITOL REBUILDING BOARD.

SANTA FE, N. MEX., *September 20, 1899.*

SIR: Pursuant to your request for a report from the capitol rebuilding board in regard to the rebuilding of the Territorial capitol, I have the honor, in behalf of the board, to respectfully report that the work is progressing satisfactorily, and that it is expected the building will be completed before the coming winter is ended. Many changes for the better have been made in the class of material used, and among such changes I may mention the framework of the dome has been constructed of steel instead of wood, the stairways of iron, and the corridors have been laid with mosaic tiling. Instead of using wood lath, we have used wire. These changes make the building fireproof to a great extent and will reduce the fire-insurance rate very much, besides making a more beautiful structure. We have been retarded in our work by delays occasioned in procuring material, especially the wood finish, owing to the fact that factories manufacturing the required material have at this time more than they can attend to, and have had for a long time past, and contractors will not bind themselves to deliver any material at all unless ample time is given.

Respectfully submitted.

F. A. MANZANARES, *President, etc.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

BOARD OF EQUALIZATION.

SIR: The board of equalization appointed by you at the last session of the legislative assembly begs leave to report that it has just completed the duties of its first session, which were those of hearing appeals and equalizing taxes only, the fixing of values being for the January meeting.

We have been in session for a week, and considered all appeals presented from the different counties, some of them having been taken by the Territory from the action of the county boards, under the new law providing therefor.

We find generally an improvement in the manner of listing and valuing property, as well as an increase in valuation of about $1,000,000 over that of last year.

While the amendments to the revenue law passed by the last legislature have only been in operation a few months, their good effect is even now apparent, and we have every reason to believe that next year will prove their very substantial value.

Very respectfully,

JAMES S. DUNCAN, *President.*
JOHN W. POE,
NUMA RAYMOND,
ALEJANDRO SANDOVAL,
Members of the Board of Equalization.
V. JARAMILLO, *Secretary.*

Hon. MIGUEL A. OTERO,
Governor of New Mexico.

TERRITORIAL LIBRARIAN.

I have the honor to submit the following report of the condition of the Territorial library at the present time:

The affairs of the Territorial library are controlled by a library board of trustees. This board is now composed of the following gentlemen: Hon. John R. McFie, ex officio chairman of the board, and the Hons. T. B. Catron and H. L. Waldo. The board has made the following additions to the library since I took charge of the same: Indiana Reports, 168 volumes; Iowa Reports, 91 volumes; Kansas Reports, 58 volumes; Kentucky Reports, 73 volumes; Maine Reports, 80 volumes; Michigan Reports, 103 volumes; New York Reports, 373 volumes; Pennsylvania Reports, 220 volumes; Texas Reports, 120 volumes; Vermont Reports, 23 volumes; one complete set of Session and Compiled Laws of New Mexico, from 1851 to 1893, 39 volumes; Century Dictionary (including Dictionary of Names), 7 volumes; Spanish-English Dictionary, Lopez and Bensley, 1 volume; Federal Cases, with Index, 31 volumes; Circuit Court Reports, 54 volumes; besides a number of volumes to fill up incomplete sets of some of the States' supreme court reports.

By the addition of the above-named volumes the library has been placed in

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excellent condition, as nearly all the States are represented, but it is far from complete. New text-books are needed. Such of these as we have are old and out of date. Such as it is, the library has been very useful to the courts.

The usual system of exchange has been maintained with the libraries of the different States, and we are continually receiving from them their publications. In exchange for this courtesy we have sent them the session laws of the last legislature, the New Mexico Reports and the Compiled Laws of 1897.

In pursuance of Chapter XXXII of the Laws of New Mexico, 1895, volumes 3, 4, 5, 6, 7, and 8 of the New Mexico Reports were published. The Territory purchased from the publishing house, at $3 per volume, 300 of each of these volumes and the library board of trustees purchased 100 of each. These books were delivered by the publishers at the Territorial library. About 80 copies of each of the above-named volumes have been distributed to State libraries, judges Supreme Court United States, judges supreme court New Mexico, Attorney-General United States, and to such persons and institutions as are designated by law. The remaining volumes are kept in the library.

Under the act of 1897 for the compilation of the laws of New Mexico, the public printer delivered at the library 500 volumes of said compiled laws in the Spanish language and 1,500 volumes in the English language. Of this number 136 copies, as authorized by law, were delivered to the secretary of the Territory for distribution to State libraries and members of the last legislature. I have delivered on orders of the Territorial treasurer the following number of volumes by him sold, as directed by law, at $8.50 per volume: English volumes, 144; Spanish, 87; total number of volumes sold, 231, yielding to the Territory the sum of $1,963.50.

The total number of volumes in the Territorial library is about 5,000. Over one-half of this number is made up of law books, the remainder consisting of State documents, executiv edocuments, patent reports, pamphlets, and miscellaneous books. It is a very valuable property to the Territory, and the board of trustees, as a guard against contingencies, has insured the same for $10,000, as follows: Five thousand dollars in the Royal Insurance Company of Liverpool and $5,000 in the American Central Insurance Company, of St. Louis.

The condition of the Spanish archives is not what it should be. Laid in ordinary shelves, they are exposed to the action of air and dust. These and the constant handling by many people eager to peruse their contents cause demolition, and they are fast crumbling away. Provision should be made for the preserva- of these archives, as they are very valuable from a historical point of view. Last fall Prof. Elliott Coues, of Washington, D. C., devoted some time in research here among these archives, and in his perusal of the different packages he came across fractions of that important historical document known as the "De Vargas Journal." These fractions were all put together, including others collected before, and the journal forms now one single batch of 100 folios dated 1693. I regret to say that a number of pages of this document are crumbling away, and still others are illegible. These papers, if lost or destroyed, can never be replaced, and a vast fund of historical data will be lost to the future historian. The oldest set of papers in the Territorial library is made up of one folio dated 1664, in which appears the only genuine signature known to exist in this country of the famous Count de Penalosa; another folio dated 1636, and a third batch consisting of six folios dated 1621. These papers are in a remarkably good state of preservation. I respectfully suggest that the legislature may adopt some measure which will preserve to the Territory forever the Spanish archives.

LAFAYETTE EMMETT,
Territorial Librarian.

ST. VINCENT HOSPITAL,
Santa Fe., N. Mex., June 30, 1899.

DEAR SIR: In compliance with your request, I herewith submit to your excel lency the following report of St. Vincent's Hospital and Orphans Home for the year ended March 4. 1899.

The hospital is open to all the afflicted, and patients are admitted regardless of nationality or religion.

We appreciate the appropriation made to us by the Territory of New Mexico for conducting our institutions in this city, but a reference to the receipts and expenditures will convey the proof that the appropriation of $4,000 does not entirely cover the expenses of the hospital, for in excess of the appropriation the expenses amount to $737.10, which was met by a donation from the sanitarium and $114.10 from the miners' collection in Cerrillos.

Apart from the actual cost of supplies furnished the inmates, other necessaries in connection with an institution of this kind must be considered, such as band-s, towels, bed linen, blankets, dishes, etc., all of which must be replaced from

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time to time and for which purpose the Territory does not allow me to use one dollar of the appropriation. The bedding is no small item to be considered, for it must be destroyed to prevent contagion.

The hospital is attended by Drs. Sloan and Massie, who give their services free of charge, and their ever-ready response to all of the many calls made upon them has in a large manner insured our success. The Sisters appreciate, and take this opportunity to thank them for, their many courtesies and kind attention to the poor in the hospital.

Three of the Sisters devote their entire time and attention to the care and comfort of the sick in the hospital wards without compensation.

The Territory of New Mexico is indebted to us in back payments on appropriations to the amount of $13,000, and I deem it a great injustice that no provision was made by the last legislature to pay this deficiency, which, in justice to the Sisters, should have been done. Most certainly a lack of appreciation and interest for the welfare of the institution is shown, and it was far from honorable and just in those who should have done their duty in this matter.

Last January a statement from the auditor was received by me, showing the entire indebtedness to amount to a deficiency of $5,163.65 on the hospital account from the forty-fifth up to and including the forty-ninth fiscal year. Dating from the same time is $8,253.33 on the orphans' account, making the total indebtedness $13,416.98. These claims were the only ones not considered when provision was made to pay all deficiencies by the last legislature.

Referring to the report of St. Vincent's Orphan Home, I have to say: During the past year there was one death, caused by pneumonia. Otherwise the health of the children is excellent.

At the close of the forty-ninth fiscal year there were 32 children in the institution, a large majority being of Mexican parentage. The children are taught all kinds of housework, and in connection therewith the rudiments of a common-school education. They have class hours week days from 9 a. m. to 12 and from 1.30 p. m. to 4 p. m. One afternoon in each week is devoted to sewing. An apparent appreciation of the advantages which the orphans' school at Santa Fe offers to the poor children of the Territory is manifested by them.

Respectfully,

SISTER EULALIA, *Superior.*

Hon. M. A. OTERO,
Governor of New Mexico.

Report of St. Vincent's Hospital from March 7, 1898, to March 4, 1899.

SUPPLIES PURCHASED DURING THE YEAR, AND COST OF SAME.

Articles.	March.	April.	May.	June.	July.	August.	September.
Groceries	$98.42	$176.71	$159.53	$277.99	$199.08	$249.44	$196.75
Meat	72.00	70.50	76.90	70.00	74.00	76.85	40.00
Feed for cows	8.00	.....	20.00	13.75	9.00	27.20	.....
Tea and coffee	.....	.....	.....	.....	41.00	.....	49.75
Drugs	25.66	17.90	18.10	8.28	9.45	12.95	12.40
Water	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Bread	26.66	26.66	26.66	26.66	24.20	33.33	26.66
Coal and freight	.....	73.30	11.50	.....	.....	.....	63.80
Coal oil	10.50	5.25	5.25	5.25	5.25	10.50	10.50
Butter	19.69	18.38	22.57	15.12	34.74	41.06	19.63
Pauper burials	6.25	.....	6.25	6.25	6.25	6.25	6.25
Total	277.18	398.70	356.76	433.30	412.97	467.58	435.74

Articles.	October.	November.	December.	January.	February.	Total.
Groceries	$210.95	$211.21	$126.74	$123.51	$124.10	$2,154.43
Meat	50.60	30.00	40.00	70.00	75.00	745.85
Feed for cows	31.50	.....	44.98	10.00	54.12	218.65
Tea and coffee	.....	.....	.....	.....	.....	90.75
Drugs	20.00	19.80	11.00	16.75	28.30	200.59
Water	10.00	10.00	10.00	10.00	10.00	120.00
Bread	33.63	22.73	26.00	24.75	26.00	323.94
Coal and freight	.....	71.92	68.40	76.00	78.43	443.35
Coal oil	10.50	10.50	10.50	10.50	10.50	105.00
Butter	20.68	23.04	22.40	20.39	20.59	278.29
Pauper burials	6.25	.....	.....	12.50	.....	56.25
Total	394.11	399.20	360.02	374.50	427.04	4,737.10

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Report of St. Vincent's Hospital from March 7, 1898, to March 4, 1899—Cont'd.

FINANCIAL STATEMENT.

Receipts.		Disbursements.	
From Territorial appropriation	$3,223.35	Groceries	$2,154.43
From Cerrillos collection	114.10	Meat	745.85
From sanitarium resources	623.00	Feed for cows	218.65
Balance due from Territory for forty-ninth fiscal year	776.65	Tea and coffee	90.75
		Drugs	200.59
		Water	120.00
		Bread	323.94
		Coal and freight	443.35
		Coal oil	105.00
		Butter	278.29
		Pauper burials	56.25
Total	4,737.10	Total	4,737.10

Number of patients in hospital March 6, 1898	20
Number of patients received during the year	62
Number of patients discharged during the year	47
Number of patients died during the year	16
Number of patients remaining in hospital March 4, 1899	19
Number of prescriptions filled	184
Total number of days	5,628

DISEASES TREATED.

Disease.	Number of cases.	Disease.	Number of cases.
Atrophy spinal cord	1	Liver complaint, chronic	1
Asthma	3	La grippe	2
Bright's disease	2	Mashed foot	2
Bronchitis, chronic	1	Optic neuritis, blind	1
Cripple for life	1	Paralysis, left side	1
Cataract	2	Paralysis	2
Cancer, facial	1	Paralysis, nervous	1
Dropsy	2	Peritonitis	1
Debility, general	3	Paralysis, partial	1
Debility and palsy	2	Poisoning, lead	1
Debility and old age	1	Pneumonia	2
Dysentery	1	Pulmonary tuberculosis	17
Dysentery, chronic	1	Rupture	1
Erysipelas	1	Rheumatism, chronic	4
Eyes burnt in mine	1	Rheumatism	2
Eye extracted	1	Sprained ankle	1
Fracture dorsal vertebra	1	Sciatica	1
Fractured skull	1	Stomach trouble	2
Frozen feet	1	Throat, ulcerated	1
Fever, malarial	3	Wound, gunshot, in face	1
Fever, mountain	1	Wound, gunshot, in leg	1
Injured foot	1	Tuberculosis of joints	1
Injury to head from falling rock	1		
Injured in railroad wreck	1	Total	82
Liver trouble	1		

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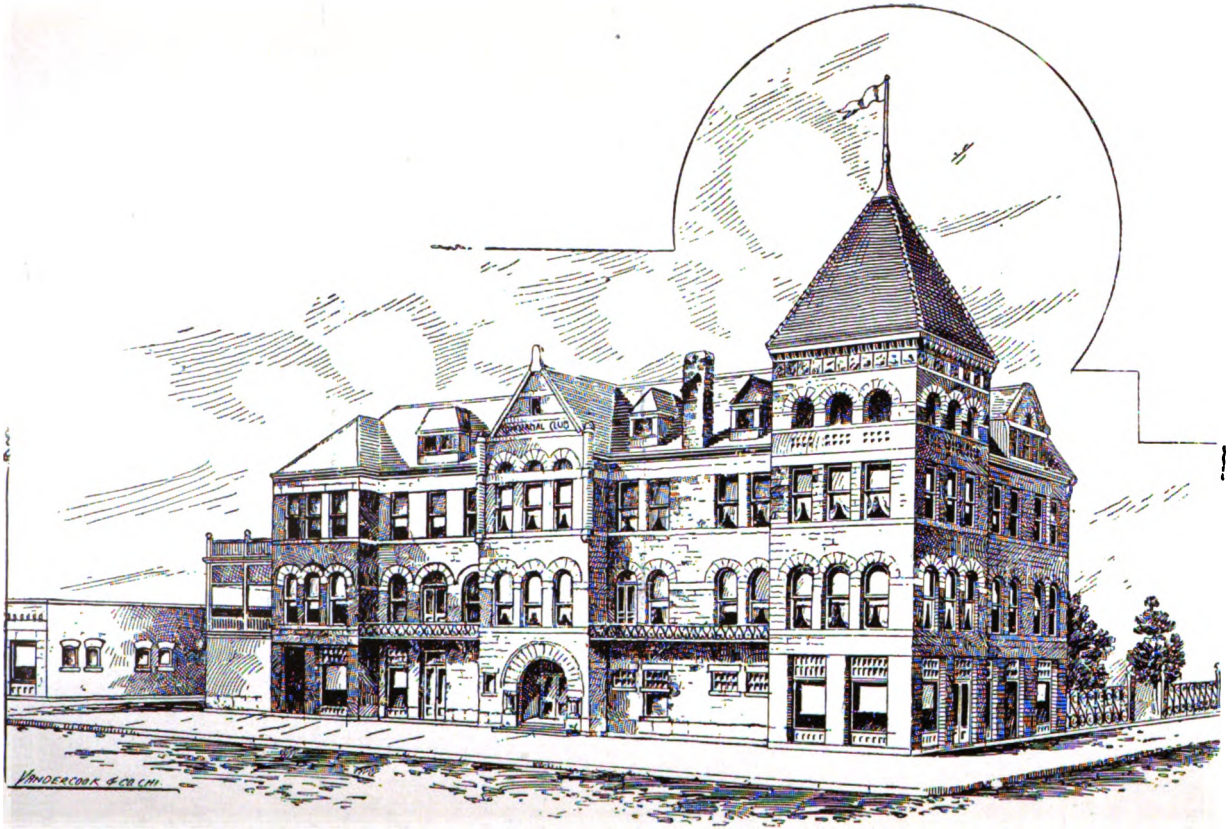

COMMERCIAL CLUB, ALBUQUERQUE.

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Report of St. Vincent's Orphan Home and Industrial School for the forty-ninth fiscal year, ended March 4, 1899.

Number of children in orphanage March 6, 1898	34
Number of children received during the year	30
Number of children taken out by relatives during the year	31
Number of deaths during the year	1
Number of children remaining in orphanage March 4, 1899	32

FINANCIAL STATEMENT.

Receipts.		Expenditures.	
From Territorial appropriation	$3,266.09	Groceries and bread	$1,550.65
From friends and children's relatives.	183.20	Meat	720.40
From sanitarium resources	293.70	Milk and butter	450.80
Balance due on appropriation of $4.000.	733.91	Drugs	65.00
		Dry goods	405.00
		Shoes	350.50
		Mending shoes	80.40
		Hose	102.60
		Hats and trimmings	50.75
		Coal and freight	425.90
		Coal oil	60.80
		Schoolbooks and slates	75.65
		Writing material and stamps	15.30
		Shoe polish and laces	14.25
		Laundry soap	53.00
		Toilet soap, combs, and brushes	25.90
		Wood	30.00
Total	4,476.90	Total	4,476.90

COUNTIES.

There are now 20 counties in the Territory of New Mexico, which are as follows:

NORTHERN TIER.

Colfax; county seat, Springer. Taos; county seat, Taos. Rio Arriba; county seat, Tierra Amarilla. San Juan; county seat, Aztec. Union; county seat, Clayton.

CENTRAL GROUP.

Mora; county seat, Mora. San Miguel; county seat, Las Vegas. Santa Fe; county seat, Santa Fe. McKinley; county seat, Gallup. Bernalillo; county seat, Albuquerque. Valencia; county seat, Los Lunas. Socorro; county seat, Socorro. Sierra; county seat, Hillsboro. Guadaloupe; county seat, Puerto de Luna.

SOUTHERN TIER.

Lincoln; county seat, Lincoln. Donna Ana; county seat, Las Cruces. Grant; county seat, Silver City. Eddy; county seat, Carlsbad. Otero; county seat, Alamogordo. Chaves; county seat, Roswell.

BERNALILLO COUNTY.

Bernalillo is one of the largest counties in New Mexico, both in area and population. It is of irregular shape, about 200 miles long from east to west, with an average width of 50 miles from north to south, containing a little over 10,000 square miles, being larger than any of the New England States except Maine.

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The present population of the county is estimated at 35,000, one-third of which is within a radius of 5 miles from the court-house in the city of Albuquerque.

An act was passed by the last legislature providing for the creation of a new county out of a portion of the western end of Bernalillo, to be known as "McKinley County," but the law has not yet gone into effect.

The county presents a great diversity of topography and climate. There are several detached mountain ranges, having altitudes as great as 12,000 feet above sea level, large areas of high mesas or table-lands, with altitudes varying from 6,000 to 9,000 feet, and valleys ranging from 4,000 to 6,000 feet.

CHIEF INDUSTRIES.

The principal industry at present in the mountain districts is mining, though grazing is carried on to some extent, especially in the timbered sections of the mountains, and during the winter season, as there is rarely snow enough, except near the top, to cover the grass, and the trees and brush furnish the animals a good measure of protection against the severe winds, which sometimes sweep over the mesas at that season. There is also a little farming done in the canyons, though in a very small way, the principal crops being potatoes, beans, and chili, and some wheat and oats. The mountain sides, when not too steep or broken, are found to be excellent fruit lands, and the crop is more reliable there than in the valleys, because less liable to injury from late frosts in the spring. Apples, especially the winter varieties, do better in the mountains than elsewhere, and it is believed by many that fruit growing on the mountain slopes will become in time a very important industry. In nearly all the mountain districts the rainfall during the growing season is sufficient to produce crops without irrigation.

The mesas or table-lands are usually long stretches of plain, varying in width from 5 to 20 miles, and extending from the base of the mountains in the direction of the valley, with an inclination of only a few feet to the mile, and ending abruptly in a range of bluffs or sand hills, which form a background of brown for the verdure of the valley. These mesas are the principal grazing districts. In seasons of average rainfall the grass grows abundantly, and owing to its peculiar character it "cures" on the ground during the fall, and instead of "washing out" and becoming valueless, like the ordinary prairie grass, it is like hay and makes almost as good feed in the winter as in the summer. These plains are dotted at all times of the year with herds of cattle and flocks of sheep. During the summer and fall the animals have to be "held" comparatively near the springs or water holes, because cattle have to range where they can go to water during the warm weather once a day and sheep at least once in two days, but after the weather gets cool and a little snow falls on the grass the animals, especially the sheep, can go a long time without drinking, and this gives them practically a fresh field in the winter, because it enables them to range over sections that they could not reach in the summer because of the distance from water, and water in New Mexico is with the ranchman, as with the farmer, the first consideration.

IRRIGATION.

By the construction of storage reservoirs in the mountain canyons to catch the storm waters which come down in great volumes during the rainy season, in July and August, and to conserve the waters of

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the small streams, a large proportion of this mesa land can be rendered arable and made to produce good crops. The soil is unusually strong, especially in the mineral elements, being composed almost wholly of detritus from the neighboring mountains and lacking only the addition of a very little animal or vegetable matter now and then to keep it rich indefinitely. But as a rule the construction of such works would promise so small an income in proportion to the capital required that private enterprise will never undertake it as long as money can earn as much in other lines as it is able to earn now, and unless the reclamation of these lands shall be undertaken by the Federal Government it is probable that the mesas of New Mexico will be left in the undisputed possession of the cattleman and the sheepman for many years to come. There are a few places in the county where private reservoirs have been constructed and are found to be successful in the irrigation of small tracts, but no work of this character on a large scale has yet been undertaken.

Nearly all the farming done in the county is done on the valley lands but a few feet above the level of the streams, and, owing to the semi-arid character of the country, has to be all carried on by irrigation. Until recently no effort was ever made to introduce any modern irrigating system, but the work has always been done by the primitive methods in vogue among the natives of the country more than two centuries ago. This has retarded the development of the county by repelling immigration in the farming districts, and more than half of the richest agricultural lands, even in the famous valley of the Rio Grande, are yet in a state of nature. But better ideas now prevail and there is a good prospect that the Aztec method of irrigation will soon be superseded by a modern American system. As long as the river carried more water than could be used the old system, with its great wastefulness, was not so objectionable, but of late years so much of the water of the river is taken out by the great canals in Colorado that the farmers of New Mexico are practically limited to such water as rises within our own Territory, and this is insufficient to meet the present demands; hence the necessity of greater economy in the use of water. A company incorporated under the laws of the Territory is now at work on the construction of a canal which will have a length of about 40 miles, covering the most populous portion of the valley, and it is believed that its construction will render practicable the cultivation of all the land within that distance, whereas at present only about one-third of it can be cultivated. This will make places for a large number of new citizens and will do much for the development of that portion of the Rio Grande Valley in question, which is one of the most desirable sections of the Territory and one in which the farmers and gardeners are never without a good home market for all of their products.

AGRICULTURE.

It is not claimed that this section can compete with the great grain-growing States of the West in the production of such field crops as wheat and corn, and it would not be wise from a business standpoint for the owners of the land to devote it to such a purpose, because it can be made to yield so much better returns when given to other crops. The true policy here is to have small farms closely cultivated, and yielding as land can only be made to yield under irrigation. In the wheat and corn growing States a man is supposed to need 160 acres to make a profitable farm, but a much smaller area is required here. A well-known writer, who has had nearly twenty years' expe-

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rience as the owner of a farm in the Rio Grande Valley in Bernalillo County, contributed an article to a recent publication by the bureau of immigration of this Territory, in which he took the ground that 10 acres of the valley land of this county, cultivated under irrigation, could be made to bring the owner a larger net cash return every year than could be realized from a quarter section in any of the grain-growing States, and he sustained his position by facts and figures drawn from actual experience. Detailing the manner in which the result mentioned can be achieved, the writer says:

Sweet potatoes of most excellent quality yield abundantly in the soil of this valley, and do not require to be irrigated as often as most other crops, thus saving the farmer much labor. Both soil and climate seem to be peculiarly adapted to their growth, and the quality of the product is fully equal to the famous sweet potatoes of New Jersey, while a fair average crop will give from 900 to 1,000 bushels to the acre. They never sell in the fall for less than $1 a bushel, and those that are kept into the winter usually bring as much as $2. From this it will be seen that 1 acre cultivated in sweet potatoes in Bernalillo County will bring the farmer as much money as he could hope to realize from 80 acres in corn or wheat, in any of the grain-growing States, in a good year, and since the result is to be measured by dollars and not by acres, it will be seen that the irrigation farmer, although he may not be able to cultivate fields as broad as those of his neighbor in the "rain belt," has a better chance of success, and a decidedly better prospect of a balance to his credit in the bank at the end of the year,

The onion is another product that seems to be peculiarly adapted to this section of the country. The large white Spanish onions, which grow to greater perfection in New Mexico than anywhere else in the United States, afford one of the most profitable crops that can be grown in this county, and is also one that can be brought to perfection only under irrigation. On account of its beautiful silvery color and its peculiar mild flavor this onion finds ready sale in any part of the country, and always commands the highest price. The yield is about 500 bushels to the acre, and the price at home ranges from $1 a bushel in the fall to $3 a bushel in the winter and spring.

Celery and asparagus are also articles which are especially adapted to the soil and climate of this county, and attain here a degree of excellence but rarely found in such articles grown elsewhere. The celery is far superior to that grown in California. and is pronounced by all who try it fully as good in all respects as the Kalamazoo product, which is noted throughout the country for its superior quality. All the eating houses and dining cars on the western divisions of the Santa Fe Railway system now draw their supplies of celery from the gardens of Bernalillo County. whereas a few years ago they obtained such supplies from Michigan and California. And when it comes to asparagus this section can fairly claim to "beat the world," for nowhere else on the American continent is there produced asparagus which can at all compare with that grown in the valley of the Rio Grande. In many places in the valley there are large quantities of a salt which goes under the common name of "alkali," and which, though deleterious to some kinds of vegetables, is one of the favorite foods of asparagus, and does away with the necessity of applying salt to the ground, as is the custom wherever asparagus is grown in the Eastern or Middle States. It also causes the plant to attain in this section a degree of excellence in tenderness and flavor which is unknown in that grown elsewhere. During April and May, the months when the cutting is done. the shoots will attain, under favorable conditions a growth of about 6 inches a day, every particle of which is edible; there is no woody portion to be thrown away; the whole stock is soft and tender, and the flavor is proportionately superior. Sample lots of asparagus from this section have been sent to many parts of the country, and the verdict is always the same—"the best I ever tasted." Experience has shown that it will bear shipment to Portland, Me., and that is as far away from New Mexico as one can get in the United States, so it will be seen the whole country is open to us as a market, and that the article can be sold wherever introduced goes without saying, for it sells itself. An asparagus bed of 1 acre will yield. after the third year, about 200 pounds a day for sixty days in the year (which is as long as it is wise to cut it), and this will bring an average price of 10 cents a pound.

Thus, with 1 acre each of sweet potatoes, celery, onions, and asparagus, a man can make a good estimate of the money value of the crop that he will have for market each year. And in addition to this he will need 2 acres in alfalfa, and 2 in corn or oats for his cow and horse, and 2 for house lot, orchard, and kitchen

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garden. That makes 10 acres in all, and is as much land as any man needs in this section to farm for profit, while it is as much as the most industrious man can properly cultivate in the crops named. There is an abundance of good land for such purposes to be had in this county at fair prices, and with good facilities for irrigating, such as are now being provided, there will be room here in this line of business for at least a thousand families, convenient to as good a market as there is anywhere in the West.

GALLUP.

The great industry of New Mexico for centuries to come will be mining. The many mountain chains and detached ranges which are found in every part of the Territory are all seamed with mineral-bearing veins. In the mountains of this county there are workable veins of gold, silver, copper, lead, and coal. The principal coal-mining industry of the Territory is carried on at Gallup, in the western part of the county, about 15 miles from the Arizona line. Gallup is a town of about 2,500 people, and is the second town of the county in size and importance. It has good public schools and churches, and an enterprising weekly newspaper, and while strictly a coal-mining town is as orderly a place as will be found in any part of the country, East or West. There has been but little done in the immediate vicinity in the way of agricultural development, by reason of the scarcity of water for irrigation, but the soil is very rich, and wherever it can be cultivated yields abundant crops. The town is situated in the valley of the Rio Puerco of the West, on the Pacific slope, just west of the Continental Divide, and at an altitude of about 6,500 feet above sea level, which gives it a delightful climate, especially in summer. The Zuñi Mountains, a few miles south of the town, contain the most extensive forests of pine timber now to be found in any part of the United States south of Minnesota. The most of this timber is on public land or on land owned by the railroad company, but owing to the distance from any railroad but little of it has yet been utilized.

Gallup is on the Santa Fe Pacific Railway, a division of the main line of the Atchison, Topeka and Santa Fe, and is the principal town on that line between Albuquerque and Los Angeles. It furnishes regular employment in its coal mines to about 600 men, and its annual output exceeds 300,000 tons, or nearly one-half the total coal output of the entire Territory. The bulk of this is delivered to the railway company, and furnishes all the fuel used by the company between the Rio Grande and the Pacific Ocean. The operators here also send large quantities of "commercial" coal to Los Angeles and other southern California points, to Phenix, Tucson, and other places in Arizona, while many thousands of tons come east to Albuquerque, and are sent south into Texas and old Mexico. The coal is a lignite, excellent for steam and domestic purposes, burning without any clinker, and leaving but little ash, though it will not coke, and is not a desirable coal for gas making. There are five known workable veins, one above another, the lowest at a depth of less than 100 feet. The field extends to an unknown distance to the north and west of the town, and is considered practically inexhaustible. The first work in the development of this field was done in 1881, but the industry did not assume important proportions till 1884, so that it can be said to be now about fifteen years old.

This is the only important industry yet developed in the western part of the county. The country is well adapted to grazing purposes, but the most of it is embraced in the reservation of the Navajo Indians, and the flocks of this tribe graze over all the reservation and

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also the adjoining lands for several miles on either side. The treaty with the Navajos requires them to keep their people and their animals within the limits of their reservation, but this provision has never been enforced.

BLAND.

The town of Bland, in the northeastern part of the county, about 50 miles by the road from Albuquerque, is also a mining town, but the work at this point is confined to mining the precious metals. The town is the center of the famous Cochiti mining country, now well known as one of the most extensive and productive of New Mexico's many mining camps. It is situated in Pino Canyon, about 10 miles from the Rio Grande, and is surrounded on all sides by a rich mineral country. It was founded about five years ago, and has a population estimated at 1,000. The nearest railway point is at Thornton, on the main line of the Atchison, Topeka, and Santa Fe, about 18 miles distant, but a stage line furnishes comfortable transportation for passengers and a daily mail. The same coaches continue up the canyon from Bland, and across the mountain to Sulphur Springs, a well-known health resort, where the waters have been found to possess highly valuable medicinal qualities. The ores of the Cochiti camp are chiefly valuable for their gold. They are usually of low grade, but are of a character that can be worked in the camp. This, taken in connection with the fact that they are found in immense bodies, and are also very evenly mineralized, makes mining at Cochiti profitable and reliable.

In a description of this camp, a writer who recently visited the place says the Washington, Lone Star, and Crown Point mines are in the immediate vicinity of the town of Bland. It is estimated that there are 50,000 tons of ore on the "dump" of the Washington mine at the present time, worth $28 a ton. The property is in litigation at present and is not being worked. The Lone Star has a vein of rich sulphides, varying from 30 to 75 feet in width, and running perpendicularly up the mountain side. This vein has been worked steadily for the last two years, and there is now enough ore "in sight" to keep a mill with a capacity of 100 tons a day running for four years. Lying parallel with this vein, and only a short distance from it, is another which has not yet been touched. It is the intention of the company owning this property to put up during the coming year a mill for the treatment of their ores with a capacity of 100 tons a day. The site has been selected, and arrangements have been made for the construction of the mill. The mill at present in use is small, having a capacity of only 25 tons a day.

The Albemarle property, upon which more work is being done now than upon any other in the district, is only about 3 miles from Bland, but it is in another canyon, and hence the mountain has to be crossed in order to reach it. The road has a grade of 1,500 feet to the mile, but it is the best route than can be found, and over it, up one side of the mountain and down the other, have to be hauled not only all the products of the mine, but all the supplies for the camp. The mine is in a canyon not over 60 feet wide at the bottom, and room was made for the mill by blasting out space in the wall of the chasm, so that the buildings themselves appear to be a part of the mountain. The 250-horsepower engine and all the immense machinery for the mill were transported over the road above mentioned. The present mill has a capacity of 110 tons a day, and another of equal capacity is now

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in course of construction. The works now give employment to about 250 men, and that number will be nearly doubled when the new mill is completed. The difficulty of procuring fuel has determined the company to substitute electricity for steam power, and works for this purpose are now being constructed at the Cerrillos coal fields, in Santa Fe County, about 20 miles distant, from which point the current will be transmitted to the mill.

This is the largest mining enterprise in the county, and there is none larger in the Territory, but a good idea can be formed of the extent and richness of the Cochiti mineral field from the fact that there is room for at least a dozen more, of equal capacity, and ore enough to keep them all running full handed for at least a quarter of a century, and probably much longer. A railroad from some point on the Atchison, Topeka and Santa Fe to Bland is much needed, and if such a line were built, so that ores could be shipped out at moderate expense, reduction works sufficient to handle the output of the camp would probably be built along the Rio Grande, where the river would furnish a sufficient water supply, the lack of which is now one of the greatest obstacles in the way of the prosperity of the camp, and where the advantage of water power could also be had. This would greatly facilitate the development of the camp, since the small operators, who are unable to put up mills of their own, would thus be given a market for their ores.

OTHER CAMPS.

There are several other mining camps in the county, though the most of them have so far been unable to send much ore to market, owing to the undeveloped state of their mines. Prominent among these may be mentioned Hell Canyon, Coyote Canyon, Las Placitas, San Isidro, and Copper City. The last two named are copper camps and the others gold and silver. They all have rich leads and lack only development to make them good and profitable metal producers, but it requires a considerable amount of capital to transform a "prospect" into a producing mine, and capital in sufficient amounts to be of value for such purposes is very rarely, if ever, found among prospectors. In some of the camps named, especially Hell Canyon, considerable development has been done, and the work in every case has justified the estimates which the owners put upon the property. In the course of time, when men with money enough to make mines of these claims take hold of them, all the camps referred to will become prosperous mining districts. There is a large copper field at Copper City, and it has been worked some in years past, but it is so far from the railway and the product and supplies have to be hauled so far over a difficult road that operations in the camp can not be carried on with profit, even at the high price of copper now prevailing. At San Isidro some work is now being done, and the prospects are very encouraging. This is much more accessible than the Copper City camp, and it is believed that the ore can be hauled out and shipped at a profit, as it is not more than 25 miles from the line of the railway.

SUMMER RESORTS.

Some of the most delightful and enjoyable summer resorts in the Southwest are in the mountains of this county, and readily accessible from the towns. The Jemez Hot Springs, now well known and popular as a health and pleasure resort, is in the canyon of the Jemez River,

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twelve hours' ride from Albuquerque by stage, and the Sulphur Springs, to which reference has been made elsewhere, are situated about 10 miles farther up in the same canyon. Both these places are well-known resorts, and their reputation extends beyond the limits of the Territory. They are visited annually by many persons in search of health, and the waters are said to have a very salutary effect in nearly all cases. They are especially valuable to those afflicted with scrofulous disorders or rheumatism, and it frequently happens that rheumatic patients who have to be carried there on their beds appear to be restored to perfect health after a sojourn of a few weeks. These places are also popular pleasure resorts in summer, because the weather is rarely too warm for comfort, and there is excellent hunting and trout fishing.

Camp Whitcomb, in the Sandia Mountains, 17 miles east of Albuquerque, is also a very popular summer resort for people from the city. It is reached by a good road, through a very interesting portion of the country, and the trip can be made from town to the "Camp" with a carriage in about three hours. The place is situated high up on the mountain side in the pine woods, and its convenience to the city, as well as the beautiful scenery, the cool and bracing atmosphere, and the abundance of pure mountain water from numerous large springs, combine to make it a very attractive warm-weather resort, and it is visited by the people from the city in large numbers throughout the season. There are a score of other good natural resorts in the county, but as they are without accommodations for the public, they are visited only by those who can go prepared to "camp out," and most of the older residents of the country prefer this style of entertainment to the hotel or public house; hence, a large number of families in the city spend their summer vacation in camp in some favorite mountain canyon where they can have all the attractions of nature in her wildest moods, and yet be not so far removed from civilization but that the city can be reached in a few hours if necessary.

ALBUQUERQUE.

The county seat of Bernalillo County is Albuquerque, the largest city in the Territory and the commercial center of all that portion of New Mexico south and west of the Glorieta Mountains, embracing about three-fourths of the Territory, and also of the northern half of Arizona. Its merchants cover an undisputed trade area of about 100,000 square miles, or a district larger than the six New England States and the State of New York combined, which give the place a wholesale trade much larger than is done by many Eastern cities of three times its population. The present population of the place is about 12,000, about one-fourth of whom are natives of the Territory, and the remainder immigrants from the "States," coming from nearly all the States of the Union. There is not a more cosmopolitan city in the United States than Albuquerque, and the peculiarly American quality of "get there" is very distinctly in evidence on every hand. The importance of the position which this place occupies with reference to the business affairs of New Mexico and Arizona can be best illustrated by the fact that the United States Post-Office Department has made it the postal headquarters for the Southwest, and the post-office here is the depository for all the offices in both the Territories. The free-delivery system was inaugurated about ten years ago, and mail is delivered twice a day in all parts of the city and once a day

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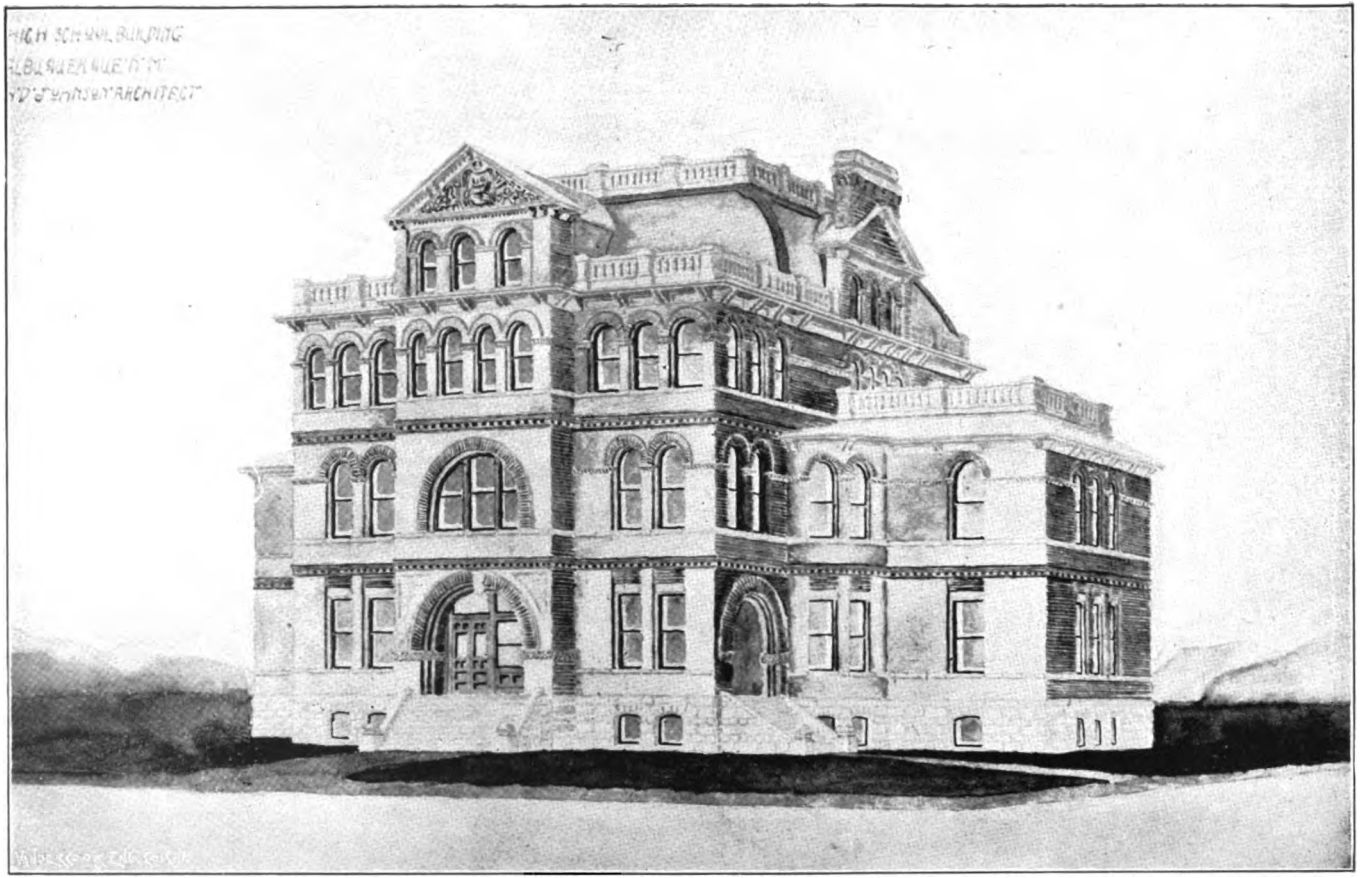

PUBLIC SCHOOL, ALBUQUERQUE.

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in the suburbs. It is also the most important point on the line of the Atchison, Topeka and Santa Fe Railway between Topeka and Los Angeles.

Many Eastern people imagine that in coming "away out to New Mexico" they would put themselves entirely beyond the pale of civilization, and for the benefit of such it may be said that they would find Albuquerque fully abreast with any Eastern city of double its size in everything that goes to make up the modern, progressive, American town—not even excepting those things that might better be left out, but which, like the buzzards, always gather where the carcass is. The town has a fine system of public schools with a large and elegant school building in each ward. There are in addition a number of good private schools, while denominational institutions are maintained by the Methodists, Presbyterians, and Catholics. It is also the seat of the University of New Mexico, established and maintained by the Territory, and endowed by the United States with a liberal donation of public land. The university building is located upon an eminence about 200 feet above the general level of the town, with an unobstructed view for many miles in every direction. With the Sandia Mountains 12 miles east for a background, the view takes in the Jemez Mountains, 60 miles north, the San Mateos, 70 miles west, and the Socorros and Magdalenas, 75 miles south, while with a glass may be seen the Mogollons, more than 125 miles to the southwest. The institution has a first-class faculty and ranks among the best Western colleges. A new building is now in course of erection, in which will be established a department that will be unique in its way, being the only one of its kind in the United States, and to be devoted to the study of climatology, with special reference to the effects of climatic conditions in the cure or prevention of disease, particularly diseases of the lungs. Mrs. Alice P. Hadley made the university a donation of $10,000 for this purpose on condition that a like sum would be contributed by the people of the Territory, whereupon the legislature appropriated $5,000 and the people of Albuquerque raised the remainder. The department will be known as "Hadley Hall," in memory of the late Walter C. Hadley.

In the matter of religious advantages the town is very thoroughly equipped. All the leading Christian denominations have societies here, with good, commodious houses of worship in which services are held regularly, and a Jewish society, organized some years ago, is now building a synagogue.

There are commodious places of public entertainment and amusement in which are given lectures, operas, theatrical entertainments, etc., and during the entertainment season the people of the place are never at a loss for "some place to go."

One of the institutions of Albuquerque worthy of special notice is the "Commercial Club." This represents a successful combination of business and social interests, and possesses within the one organization all the principal features of a chamber of commerce and a social club. To the active and effective work of this organization as a general "push committee" is attributed much of the prosperity which has been enjoyed by the town during the last ten years. It is quartered in its own building, erected especially for the purpose at a cost of $75,000, a large and elegant structure of red sandstone, and which is pronounced by visitors as fine a clubhouse as any west of Chicago.

The principal shops of the Atchison, Topeka and Santa Fe Railway

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west of Topeka are located here and furnish regular employment to some 600 men. These shops are being steadily enlarged, and it is said to be the intention of the company to have all of its work done here for all of that portion of its system west of the western line of Kansas, which will render necessary the employment at this place of about 1,200 men.

There is an excellent system of waterworks, furnishing the purest of water in great abundance, both for domestic use and for lawn irrigation, and at very low rates. Light is furnished by gas works and an electric-light plant, the streets being lighted by electricity.

All the streets are graded, and most of them are paved with a natural cement obtained from the neighboring hills, and laid upon a foundation of cobblestones, making a thoroughfare very firm, smooth, and durable. Excellent sidewalks line all the principal streets of the place, the popular material for this purpose being an artificial stone made of sand and Portland cement upon a foundation of gravel. This makes a walk as hard and smooth as natural stone, and apparently quite as durable.

The manufacturing interests of the town, in addition to the railway works above named, are represented by a foundry and machine shop, which turns out large quantities of work, especially for the many mining camps in various parts of the Territory; a brewery and two ice factories, which ship their products to all parts of Mexico and west to the California line; two flouring mills, two mineral-water establishments, a planing mill, four brickyards, a cigar factory, a broom factory, and many smaller establishments.

There is an excellent opening here for a canning factory, to handle the fruits and vegetables which are grown in great abundance in this vicinity, and a beet-sugar factory.

Nearly all lines of business, commercial, mechanical, and professional, are represented in Albuquerque, and it has, in addition, a considerable population composed of persons not engaged in any active business, who seek the mild, dry atmosphere of this section, especially during the winter season, for health or pleasure.

There are two daily papers in the town, one issued in the morning and the other in the evening; five weekly papers, and one monthly publication, the last named being devoted to the interests of the mining industry. The town also possesses the largest and best free public library in the southwest, which is maintained by a special tax levied by the city council for that purpose.

CHAVES COUNTY.

In point of natural resources from which are rapidly being developed conditions that are soon to support a prosperous, wealthy people, Chaves is the banner county of New Mexico.

As originally organized in 1899 from a portion of the county of Lincoln, it was approximately 100 miles from north to south and 110 miles from east to west. The legislature of 1899 added territory on the southwest about 36 miles square. The greater part of this large area is grazing land, pure and simple, excellent grass lands which sustain thousands of cattle and sheep the year round and which, with the further development of water, which is quite practicable, will sustain even more. A great deal of the range area is held by cattle owners who have title, in many instances, to land on which are found springs and lakes, or on which they have dug or bored wells and put up wind-

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mills and, owning these improvements, are able to control, in a manner, the range contiguous. But there are large areas of grass lands on which no water is found during a very dry season, and it is in such localities that the development of water is most important, since without water the range, although covered with the best of feed, is practically well-nigh valueless. To this matter, the finding of a water supply, a great deal of attention is being devoted, at a heavy expense in some cases. Large well-boring machines, worked by gasoline engines, are being used, and the work is being carried on, slowly but surely, by men of means who understand the importance of procuring an adequate supply of water. The open-range stock interests were the original mainstay of the county and continue to be the most important in point of tax-paying ability. But the glory of Chaves County, at least at present, is the magnificent alfalfa farms with their herds of fine cattle—Herefords and Shorthorns—and their flocks of Shropshire sheep. Two large farms, one of 1,000 acres and another comprising 13,000 acres in both alfalfa and natural-grass pastures, are devoted exclusively to the Hereford industry, and have on them as fine animals as could be purchased from some of the leading breeders of registered Herefords in the United States. In fact the owners of these farms have among their fine stock many prominent prize winners. The owner of Sir Bredwell, who paid $5,000 for him, has lately purchased a 500-acre alfalfa farm 2 miles east of Roswell at a cost of $25,000, and will spend thousands of dollars making it a model Hereford home. The two farms referred to above are a surprise and delight to all who see them and the fine stock on them. Chaves County will soon be known as one of the most prominent, successful Hereford breeding grounds in the United States. The pioneers in the industry here are men of ample means who have "set their mark high" and whose dictionary does not contain the word "fail." Their friendly emulation and that of others to follow will result in a few years in placing Chaves County in the front rank of fine whiteface breeding centers. The breeders of Herefords at present are devoting their attention largely to the raising of young bulls. The home demand—the range-cattle owners—has so far taken all that could be raised. Inquiries are being made by large cattle owners from Old Mexico for young bulls with which to improve their herds, and they will be good customers.

Meanwhile the old "standby," the Shorthorn, is not being neglected. There are three herds of 400 to 500 each, two of which are being bred straight, while the other, some 500 Durham cows, are being crossed with Hereford bulls. These herds are also owned by men who are able to breed the best and will do so. The result will be watched with interest.

For the breeding of both Herefords and Shorthorns in the arid region the alfalfa farm is a necessity, and as that wonderful forage crop can not be raised successfully without irrigation Chaves County, with its abundant supply of water, possesses advantages superior to any other portion of the Southwest.

WATER SUPPLY.

The irrigation systems of Chaves County at present obtain their supply of water from three sources:

First. The immense springs in the vicinity of Roswell, fed by subterranean streams of artesian origin. From these five beautiful, limpid streams of water flow, known as the North Berrendo, Middle

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Berrendo, South Berrendo, North Spring River, and South Spring River. These streams are the fishing grounds where disciples of Isaak Walton find rare sport catching black bass, which are abundant.

Second. The large number of artesian wells, for which this locality is becoming famous. The first artesian well in this county was drilled in the summer of 1891 and flowed about 10 gallons per minute. The last one, developed in the town of Roswell, was drilled in five days to a depth of 285 feet at a cost of $550 and flows over 2,000 gallons per minute. Of these wells there are now over 100 in the county, and the aggregate flow of water from them is already an important addition to the supply for irrigation, in addition to its use for domestic purposes. A large number of wells are utilized for piping water into dwellings and business houses, the strong pressure making it practicable. A recent successful experiment by a citizen of Roswell has demonstrated the fact that this pressure is ample to operate a small hydraulic ram, costing $20, by which water can be forced into a large tank 30, 40, 50, or more feet above the ground and furnish an abundant supply of water for the second, third, and fourth stories of buildings. The artesian-well development and its uses, including the furnishing of power for machinery, is in its infancy here, notwithstanding the satisfactory results that have already been obtained, and it is confidently believed that further developments, when test wells shall have been drilled to much greater depths, will make present results seem small. The deepest well so far is 950 feet and flows water much softer than any other well known in this region.

Third. The flood waters from the great watershed of the White Mountain region, which extends for nearly 100 miles west of Roswell. The most of this supply goes to waste for want of storage reservoirs, which some day in the near future will be built, and these flood waters will then be used to make productive from 1,000,000 to 1,500,000 acres of rich, fertile land which now produces only grama grass for pasturage. Plans for the building of these reservoirs have been under consideration for some years and need only brains, energy, and capital to carry them into effect and practical operation.

SHEEP AND WOOL.

This important industry has grown remarkably in the past two years owing to the favorable conditions existing, making it highly profitable to flock masters. The number of sheep in the county is estimated by well-informed persons at fully 250,000 head. The reasonable tax rate, ample range, and other favorable conditions have caused owners from other portions of the Territory to move their flocks to Chaves County, and the business has become one of the most important.

ROSWELL.

Roswell, the county seat of Chaves County, has a population of 2,500, which is steadily increasing; excellent graded schools, superior to those of many a larger, older town in the States; the New Mexico Military Institute, fully mentioned herein, an ice factory, telephone system, one bank, prosperous churches, a flourishing commercial club of 65 members, and nearly all lines of business, represented by live, energetic men. As these lines are written, the board of town trustees have just received the report of an expert on the estimated cost of a sewerage system for the town, amounting to $27,000, a 20-acre farm for the proper disposition of the sewage having been donated for that

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FOUR-YEAR-OLD APPLE TREE, PECOS VALLEY.

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purpose by a progressive, nonresident property owner of large means. An election for the purpose of voting bonds will be called, and will without doubt carry. An electric-light plant is under careful consideration and will be installed in the near future. Ten miles of streets are graded, many of them being shaded by handsome trees, and various public improvements are being projected for early consummation. The inhabitants of the town include people from every State and Territory in the Union, and are intelligent, wide-awake, and progressive. Plans for the establishment of a female college are maturing and promise to meet with substantial encouragement, amply sufficient to insure its success.

From January 1 to September 1, 1899 (eight months), the buildings completed and in course of construction in the town amount to $115,000.

FRUITS.

The fruits raised in the Pecos Valley are the admiration and delight of all who see and taste them, particularly the apples and pears. When orchardists learn to plant peaches only on high ground, better results will be obtained, as it is noticed that those so situated bear without fail. Grapes and cherries have been neglected, but both are raised to some extent and of the finest flavor, particularly the former. Chaves County fruit takes first premium wherever exhibited. Apples, pears, and plums are especially fine. Experts agree that the apples raised here have no superior anywhere in the United States for size, color, symmetry, and flavor. Their natural high polish and their perfect condition make them ready sellers in every market. The absence of all pests common to apple orchards makes the lot of the orchardist here a happy one, compared with other localities where the principal part of his labor is the carrying on of an unequal fight with insects that defy all efforts to cope with them successfully. These facts make apple raising in Chaves County take rank next to the live-stock business in importance. One orchard of 500 acres is now coming into bearing and another of 250 acres is being set out. There are a number of older orchards which have been bearing for years, furnishing the product which has given the county its well-deserved reputation as a fine fruit region.

CLIMATE.

To those who have taken the pains to make intelligent inquiry, the remarkable climate of the Pecos Valley and its beneficial effect upon persons troubled with diseases of the throat or lungs, in particular, is almost too well known to call for any extended mention. The dry, pure air, the bright sunshine during the greater part of the year, the excellent chances for hunting and fishing and other diversions, make Roswell a desirable place for those who need such a climate. The great need has been a sanitarium, properly arranged, with modern conveniences, and conducted according to the best rules of practice laid down by acknowledged expert authorities who have acquired practical experience in the successful management of such institutions. This want is now to be supplied. One of the finest blocks in the town, 350 by 421 feet, beautifully situated, has just been purchased by a physician who has unlimited means at his command. He will erect a fine building with a group of cottages in connection, improve the grounds, and make the property one of the finest and most attractive in the Southwest.

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RAILROADS.

The extension of the Pecos Valley and Northeastern Railway from Roswell to Amarillo, Tex., 220 miles northeast, was completed February 15, 1899, giving direct connection with Kansas City, Chicago, St. Louis, and Denver, and to this is due very largely the increase of population and investment of capital in the town and county. The machine shops, roundhouse, and the general offices are located at Roswell, and thousands of dollars are being spent by the company in improvements here, a $10,000 building for the general offices being in course of construction at this time. When the improvements shall have been completed and a full force at work in all departments, which will be soon, the pay roll will aggregate $5,000 or more each month. Roswell is the central point on the line which, together with the superior quality of the water here and the abundant supply, and the fact that the principal stockholders in the company own valuable lands close to the town, are significant reasons for centralizing the railroad company's operating forces at this point.

From February 15 to July 1, 1899, the wool shipments from Roswell reached very close to 1,000,000 pounds, while 300 cars of cattle were shipped from this point in the same time. The shipments this fall will also be very large, adding heavily to the above figures. The Pecos Valley and Northeastern will in all probability be extended soon from Pecos to Boquillas, Tex., where it will connect with the road being built from central Mexico, thus adding very greatly to the traffic of the road and to its importance. Of more importance to Roswell is the proposed line west to the coal fields and gold and silver mines of Lincoln County, to a junction with the El Paso and Northeastern Railway, and on west to some point on the Atchison, Topeka and Santa Fe line, affording a market for the alfalfa, fruits, and vegetables raised here, and making it possible to secure a supply of coal and wood at lower figures than at present.

STOCK INDUSTRY.

The stock industry is the principal industry of the county of Chaves, and has grown rapidly during the past year. The assessed valuation of the cattle in the county of Chaves for the year 1899 is $1,000,000, while the actual valuation is $4,000,000.

One hundred thousand sheep have been permanently located within the boundaries of Chaves County during the last two months in addition to 150,000 already returned for taxation. We probably have considerably over 250,000 sheep now, and will sell right here in Roswell 1,500,000 pounds of wool next spring. The high price of beef cattle and sheep has added wonderfully to the income of Chaves County, and is on the increase all the time.

THE ADDITION OF THE LOWER PENASCO COUNTRY.

This addition gives Chaves thirty-six townships, rich in grazing and agricultural lands, and containing a particularly solvent community of about 500 souls, among whom last year there was not $500 in delinquent taxes. This section is naturally tributary to Roswell, and will be of great benefit to Chaves County as a paying business adjunct.

PORTALES.

The new town and post-office of Portales is located on the Pecos Valley and Northeastern Railroad. It is located in a splendid graz-

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ing country where water is easily obtained and in large quantities; is surrounded by large cattle ranches, and promises to become a large cattle shipping point. It now has a progressive population of about 250, two good-sized general stores, a lumber yard, etc., a $3,000 schoolhouse is in process of erection, and a thriving community is promised. During the year a post-office has been established at South Spring, 5 miles south of Roswell, and at Glen, 40 miles north, besides the one at Portales, already mentioned. Chaves County also absorbed two offices in addition to the country belonging to the Lower Penasco and Elk.

POPULATION OF CHAVES COUNTY.

The county now contains about 5,000 people and is daily receiving additions. By the time the next census is taken in June it will doubtless have many more inhabitants. This is a rapid increase and is an increase which is decidedly permanent. The new people are almost all people of means and intelligence, and are of great advantage to us socially and financially.

The New Mexico Military Institute, which is fully described as to purpose, etc., in another part of this report, will bring many people to Roswell, the county seat of Chaves County, as it has already done, for the purpose of educating their children and having them receive advantages equal to those to be obtained in the East.

COLFAX COUNTY.

Colfax County, situate in the northeastern part of New Mexico immediately south of the Colorado line, is 72 miles long from east to west and 54 miles wide. It contains 2,488,320 acres, more than one-half of which is included within the boundaries of the Maxwell land grant, title to which was confirmed in 1886. During the fiscal year ending June 30, 1899, large tracts of land amounting to 200,000 acres have been sold by the grant company to individual ranchmen, farmers, and minor corporations. The land within the grant is mostly mountainous, containing large tracts of valuable timber, coal, gold, iron, and copper. The remaining land in the county is mostly undulating prairie, resembling very much the one-time prairie land of the Mississippi Valley, with a gradual slope northwest to southeast. During the past year more than one hundred families have settled on this public domain, and with their predecessors are becoming thrifty farmers and ranchmen. A large portion of the land still remains the property of the Government. The soil is rich, and a great portion of it can be irrigated from the waters of the Red, Vermejo, Cimmaron, and Rayado rivers, and many smaller streams. The altitude varies from 5,600 feet in the southeastern portion to 7,000 feet at the foothills, arising to 13,000 feet on the western boundary, which is the highest point of the Sangre de Cristo Range. The northern portion is bounded by the Raton Range of mountains, being a spur or offshoot from one of the main ranges of the Rockies. The mountains on the north and west offer a natural protection from the snowstorms and blizzards, as well as from high winds. The average mean temperature is 50° F. near the foothills, the coldest being 32° and the warmest 72°. The atmosphere is dry and no great extremes of heat or cold exist. The average rainfall is 14 to 19 inches at this altitude, but the rainfall in the mountains runs as high as 30 inches. During the winter the canyons in the mountains are filled with snow, which

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gradually melts during the spring and summer, furnishing a sufficient supply of water for need of irrigation.

The population of Colfax County is about 14,000, and though coming from various States of the Union, different parts of Europe and Mexico, together with the native population who remained there at the time New Mexico became part of the United States, and engaged in various pursuits of life, are yet as homogeneous a class of people as are found anywhere between the Atlantic and Pacific oceans, and are industrious, thrifty, and progressive.

In the northeastern portion of the county are the Johnson and Barela mesas, which have sufficient rainfall for all farming purposes without irrigation. On these two mesas alone nearly 40,000 acres of land are now under cultivation.

The mountain streams abound in trout, and there are still many deer, bears, turkeys, grouse, and other game to be found in the mountains.

RAILROADS.

There are two railroads within the county, the Atchison, Topeka and Santa Fe running from north to south a little east of the center, and a branch of the Colorado and Southern extending into the mountain district on the northwest corner.

CITIES.

The principal cities, towns, and villages are Raton, Gardner, Blossburg, Springer, Elizabethtown, Cimmaron, Maxwell City, and Catskill, all, with the exception of Cimmaron and Elizabethtown, being on the line of railroads, and are doing a good, thriving business.

Raton has a population of 3,800. The Atchison, Topeka and Santa Fe Railroad Company has its second largest machine shops at this point, and employs a large number of machinists. A splendid waterworks system, electric-light plant, and many costly and modern buildings have been erected recently.

Gardner is the headquarters of the Raton Coal and Coke Company, whose output of coal is from 60 to 70 cars per day, and has 76 coke ovens in operation. The coal is mined mostly by the use of electric machines. Here, also, you find a waterwork system and an electric-light plant.

Blossburg, lying within 1 mile of Gardner, was formerly the headquarters of this coal company, and considerable business is still done at this point.

Springer and Maxwell City each have good waterworks systems, and in the vicinity of each 20,000 to 30,000 acres of land has been placed under irrigation and farming has been making rapid strides at these points. At Maxwell City a modern flouring mill handles the wheat raised in the county.

Cimmaron and Elizabethtown are the two principal mining towns in the county. The latter during the past year has been making rapid strides in population and in the development of the mines surrounding it. Nearly all the mineral in the county lies within the confines of the Maxwell land-grant boundaries, but as this company offers the same inducement to prospectors and locaters as does the Government the mines are becoming rapidly developed and much mineral is now being shipped therefrom.

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MINES.

The principal paying mines in the county are the Aztec, Black Horse, Montezuma, Red Bandana, Legal Tender, and Black Copper, the former having produced more than $1,000,000. Nearly all of these properties are now being worked on a paying basis. Within the past year two modern and up-to-date mills have been put into operation, one of which is a custom mill handling 40 to 60 tons per day.

Much placer mining is being done in the Ute Creek and the Moreno Valley, situate on either side of Baldy Mountain, also near Cimmaron and Bonita and Uracca canyons. Recent developments have shown that both quartz and placer mining may be carried on at a profit. It is but 25 to 50 miles from all of these mines to the line of the Atchison, Topeka and Santa Fe Railroad Company, and considerable ore is shipped to the smelters at Pueblo and Denver.

PETROLEUM.

Within the past year petroleum has been found in large quantities in the northeastern part of the county, and machinery is now being put in place for the purpose of extracting the same for market use.

LUMBER.

In the vicinity of Catskill seven sawmills are kept constantly at work and several hundred thousand feet of lumber are sawed daily, cut from the finest cedar, pine, and spruce timber.

CATTLE.

About 70,000 head of cattle are grazed within the boundaries of this county, contained in large pastures, one of which covers an area of 120,000 acres, recently purchased from the Maxwell Land Grant Company. The protection offered by the mountains on the west and east, and the dry, crisp atmosphere which cures the native grass when matured, does away with the necessity of cattle feed in the winter.

SHEEP.

One hundred thousand head of sheep are grazed on the plains both winter and summer without shelter, and seldom do their owners sustain loss by the storms of winter.

FARMING.

Considerable farming is carried on in the mountain valleys, where wheat, oats, rye, barley, and all vegetables known to the Mississippi Valley are raised in large quantities, unsurpassed in quality, and with but little cultivation. Alfalfa is the principal domestic grass, producing three cuttings each year.

Corn is grown in small quantities only, the summer nights being so cool as to prevent its maturing.

FRUIT RAISING.

Nearly all kinds of fruit grown in the temperate zone are raised at a profit, apples, pears, plums, cherries, apricots, and nectarines growing in abundance, yielding their producers larger returns than anywhere in the East. All small fruits grow with but little cultivation. The flavor of New Mexico fruit has become widely known, and that grown in Colfax County may be considered a fair average. The trees

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are free from blight, and the fruit grower has never had to contend with any insects which destroy the profit of the fruit grown in the East.

CEMENT.

Near the town of Springer are several stratums of cement rock, from which the Springer Cement Company produces an excellent quality of hydraulic cement and cement brick for building purposes.

ARTESIAN WATER.

Six miles southeast of Springer two artesian wells have been flowing during the past eight years. The water therefrom is bottled and shipped to distant towns and cities for medical purposes. Chemists have declared it to be the best known mineral water for dyspepsia and kidney ailments. These wells are from 150 to 200 feet deep and produce a 6-inch flow, irrigating large tracts of land.

The small expense in sinking artesian wells offers a splendid opportunity for farmers of small means who desire to farm by irrigation.

DAIRY FARMING.

Three miles east of Raton, on the Sugarite Creek, is the largest dairy farm in the county, containing 20,000 acres of land. A butter and cheese factory produces large quantities of these necessaries, which are marketed in Raton and immediate towns.

EDUCATION.

Within the county are thirty-nine school districts in which school is taught from three to ten months in each year, thus guaranteeing to every child reared within the confines of the county an opportunity for at least a good common-school education. At Raton our teachers are employed ten months in each year. Good salaries are paid, thus securing able educators, who gradually lead the mind from the lower branches to the scientific, and also teach some of the classics and modern languages. Two school buildings have heretofore been used, one containing eight rooms; but the school board during the last year, seeing the necessity of more school room, ordered a new building at an expense of $15,000, which is now in course of construction.

The teachers' institute is held at Raton, the county seat, for a period of two weeks during the latter part of August. Experienced and highly-paid educators are in attendance, thus guaranteeing to each teacher in the county an opportunity to keep in the lead with the onward march of education and general progress in the schoolroom. Each school district in the county has a splendid and commodious school building.

PLUMBAGO.

Seven miles southeast of Raton several plumbago mines have recently been opened up and are now being developed. Several miners are employed, and the plumbago is shipped to Chicago, the headquarters of the company operating the mines, where the crude material is rapidly transferred to the marketable, which is found to be equal to any of that used in the lead pencils of to-day.

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DONA ANA COUNTY.

Dona Ana County is situated in the southern part of the Territory of New Mexico, between the thirty-second and thirty-third degrees of latitude and the twenty-ninth and thirtieth degrees of longitude west from Washington.

The resources of this county are mainly agricultural. It is watered by the Rio Grande, which enters Dona Ana County in its northwestern part, and flows in a southeasterly direction through the county for a distance of 100 miles. The valley of the Rio Grande in this county is on an average about 7 miles wide. Part of said valley around Las Cruces (the county seat of said county) is known as the Mesilla Valley, far famed and favorably known for its production of wheat, indian corn, alfalfa, and fine fruits, especially peaches, pears, apples, plums, and grapes, and all kinds of berries, such as strawberries, gooseberries, etc. Among the many varieties, one of the best known is the mission grape, the best-flavored grape for table use known in the civilized world. This grape was introduced into Mexico, New Mexico, and California in the eighteenth century by the pioneers of civilization, the Franciscan fathers, who were early missionaries of this country. Therefore the name "mission grape."

All the agricultural lands have to be irrigated in this arid region. The irrigation is entirely dependent on the supply of water from the Rio Grande, and owing to the canals in the northern part of this Territory and Colorado the flow of water in said river is at the present time not sufficient to irrigate said lands, or any portion thereof, successfully during the year; and until a system of storage reservoirs and canals is inaugurated the present state of affairs will continue. In all probability the Elephant Butte reservoirs and canals will be built in the near future—as soon as their legal status has been decided by the courts—and said canals will be able to furnish water to all the lands subject to irrigation in Dona Ana County.

The soil of the Rio Grande Valley is a rich alluvial soil, consisting of the decomposed matter of trees, leaves, limestone, etc., which has been carried as sediment down the Rio Grande and left in the valley by its overflows, which have occurred periodically during the past centuries.

At the present time there are irrigated and cultivated about 32,000 acres in the valley, while there are 35,000 acres more susceptible to irrigation, provided a proper canal system is established, as above stated.

Of the 35,000 acres of land now lying idle, there are about 27,000 acres situated on grants, and the remaining 8,000 acres are vacant United States Government lands, subject to the homestead and desert-land entry acts.

Donna Ana County has also about 3,000,000 acres of mountain and table lands which are used for grazing purposes, and furnish grass for horses, cattle, and sheep from one year to the other. In a few years to come, as soon as plenty of water to irrigate with has been obtained, the Rio Grande Valley in Donna Ana County will be the farmers' paradise, as, on account of the climatic conditions existing, the altitude of the valley being on an average of 3,900 feet, the farmer can work all the year round, having very near perpetual sunshine, an even climate, not too cold nor too hot, no snow nor blizzards.

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ALFALFA.

This is conceded everywhere to be one of the greatest wealth producers. In this valley it is almost an universal crop. Every farmer grows more or less of it. Without exception as to years, on the 10th of May the first cutting is being harvested, and it is the expectation that three more cuttings will follow, at intervals of about five weeks. But because the citizens have been prohibited from storing the great surplus of water that flows down the Rio Grande at a season when it is not needed, the number of cuttings is sometimes reduced to two. Some farmers are growing alfalfa for market on quite a large scale. One farmer usually sells about 700 tons, besides feeding a large amount to stock. Several others do about the same, but the actual statistics are not at hand. On account of the superior grade of cured alfalfa produced here, it brings a higher price in market than that produced in many other places.

WHEAT.

Perhaps there is no other spot in the United States where wheat of the very highest grade is more certainly produced than in this valley. It knows no enemies or pests of any kind, no rust, no chinch bug, nor anything else to interfere with its growth and maturity. While it is not raised on a large scale by anyone, it is so universally grown by all farmers, large and small, for home consumption, that four flouring mills are sustained in the valley.

INDIAN CORN.

This valuable cereal grows to perfection. It is no exaggeration to say that, both for quality and quantity per acre, this valley will rival the Missouri and Wabash bottoms. Under favorable circumstances a crop of corn can be grown from the same land from which the crop of wheat has been grown in the same year.

FRUITS.

Nearly all deciduous fruits grow well, and some of them do better than in almost any other place. Among these may be named peaches, which in the Mesilla Valley are equal to the finest to be found in any part of the world, both as to size and flavor. During this season (1899) when the peach crop has been a failure in many parts of the United States, here it has been large. From one orchard over 7 full carloads of early peaches were shipped, besides the large amounts sold at retail and in smaller quantities. Apples, pears, quinces, plums, and prunes are grown in the greatest abundance and are of most excellent quality. The codling moth here, as elsewhere, is giving the apple grower some trouble, but it is hoped that some means will be found to overcome its ravages.

GRAPES.

The summer climate here seems to have a peculiar value in converting the starch of fruits into sugar. For this reason the grapes grown in this valley are thought to possess a richness of flavor seldom found in any others. Many varieties are grown, but the Mission, the Muscat, and the seedless are leading varieties for shipping purposes.

VEGETABLES.

Vegetables of nearly all kinds, except Irish potatoes, do well, and are grown in abundance for home consumption and for shipping.

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Cantaloupes and watermelons are exceedingly fine and delicious. Particular notice may be made of the tomato. The raising and canning of tomatoes has become quite an industry, and the product of the Mesilla Valley canning factory brings in open market a price much higher than those produced elsewhere. Mr. Theodore Roualt is growing the present season about 300 acres of tomatoes, and expects to can and ship about 30,000 cases of same and 6,000 cases of canned green chile.

There is but one thing in the way of making this valley a "farmers' paradise"—our inability to store the waste waters of the Rio Grande.

LABOR SUPPLY.

Owing to the proximity of this county to the border of Mexico, the supply of common laborers is fully equal to the demand. Skilled artisans command fair wages, especially carpenters. During the past year or so miners have been in demand, at customary wages, and the prospects are that increasing numbers will be employed as the new mines are opened up.

PUBLIC BUILDINGS.

Las Cruces, the county seat of Donna Ana County, possesses a very pretty and commodious brick court-house, finished with stone, surrounded by beautiful grounds; a large brick schoolhouse, a large hall, and an academy conducted by the order of the Sisters of Loretto. Union Park is situated just diagonally across the street from the court-house grounds; this park has a large pavilion in the center. It is most beautifully laid out and planted with trees and flowers, which line broad avenues, and was an inception of the "Woman's Improvement Association," a club composed of the foremost ladies of the town.

The following religious denominations have church edifices here: Catholic, Methodist Episcopal, Methodist Episcopal South, Methodist mission, Presbyterian mission, and Presbyterian. About 2 miles south of Las Cruces, at Mesilla Park, are located the buildings and grounds of the New Mexico College of Agriculture and Mechanic Arts. The main building is a fine structure of two stories and a basement, consisting of thirteen rooms. Science Hall, a large two-story brick building, contains eleven large recitation rooms and five smaller ones. There is also an engineering building, girls' dormitory, seed house, and a large greenhouse, and numerous auxiliary buildings.

The college farm contains about 250 acres, all in cultivation, one-half being river-bottom lands.

SOCIAL AND INDUSTRIAL PROGRESS.

It is essential to the highest development of any community that its members have a common language. The older generation of the native people of this county, as in all other counties of the Territory, have been born under another Government, with another language, and can not be expected to speak English. However, it is an encouraging fact that by far the larger portion of our younger native-born citizens speak more or less English, and it is a further noticeable fact and truth that each succeeding generation commands a freer use of the English language.

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The native people who formerly used primitive implements in their agricultural pursuits are rapidly adapting themselves to better and more modern methods.

MINES AND MINING.

In the southeast corner of New Mexico is situated the Organ Mountains. If this mineral formation was in Colorado, Montana, Idaho, or any of the Western States in which active mining and prospecting is carried on there would be to-day 5,000 men at work. Commencing at the Modoc mine, on the extreme south end of this formation, minerals in good paying quantities have been found at intervals that have extended as far as the great copper deposits of the San Andreas, 70 miles to the north. The contact of lime and granite is without a break the entire distance. The Modoc mine has been developed to a depth of 160 feet by a shaft. The ore has increased in value and worth with every foot sunk. At the bottom this vein is 15 feet wide, and 30 per cent lead ore. With lead at the present price this would be a very valuable mine if situated in Colorado. The Bennett-Stevenson mine on the same contact, about 6 miles to the north, has been a large producer since the early sixties. The production for the past year (mining what had been left behind) was in excess of $40,000. No work has been done on this mine below the water level. About 2 miles farther north the Torpedo mine is producing a carload per week of 20 per cent copper ore, the work of two miners. The Memphis, adjoining the Torpedo, has been a great producer of copper and high-grade silver ore. At present this mine is only operated to furnish water for the Bennett mill. Still, on the same contact extending to the north is the Jay Gould mine, shipping high-grade ore, copper and silver. The Merrimac, Little Buck (that produced $35,000 in silver in a few days), the Edison, Brown and Hafford, McLaughlin, Thompson, and Roualt, and other propositions all show veins of lead, copper, and silver in paying quantities when the right people come along and take hold of them. The Bear Canyon mines of Messrs. Bennett & Friedenbloom will some day be immense producers of lead and silver. At the head of St. Nicholas Canyon are found the finest indications of the existence of lead and silver ores yet to be found. The great San Andreas copper deposits are now shipping high-grade copper ores to El Paso. The Atchison, Topeka and Santa Fe Railroad contemplate putting in good roads to these mines to secure the freighting of the ores. This is truly a wonderful contact, but it needs new blood, with energy and capital. It will then give employment to thousands and add vast wealth to the Territory.

CLIMATE.

Donna Ana County, in common with the other sections of New Mexico, can lay claim to a health-giving climate; but apart from the generally favorable reputation of the Territory, as a whole, this county, embracing as it does the famous Mesilla Valley, has advantages from a climatic and public-health standpoint which are unparalleled. That modern scourge, typhoid fever, is very little known in this region, and the ordinary zymotic diseases are only occasionally seen. Among the native population tuberculosis is almost unknown, though of late years several isolated cases have come under the writer's notice.

The excellence of the health of school children is very noticeable, and is well attested by the records of attendance. As a location for the rearing of children where they may escape the various illnesses to which their age predisposes Donna Ana County can have no superior.

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The climatic advantages of this section are manifold, as will be readily understood from the following condensation of the United States Experimental Station reports: During the last five years the average number of sunshiny days has been three hundred and forty-eight; the relative humidity during the winter months being 34. This maximum amount of sunshine and unprecedented atmospheric dryness, combined with the pure air which our mountain situation affords and the equability of temperature which our moderate altitude insures, makes the Mesilla Valley, the "pride of the county," an ideal health resort. In fact, it is nature's great sanitarium. These wonderful climatic conditions have been taken advantage of in the establishment of numerous resorts for the care of patients with incipient pulmonary diseases. At the present writing a sanitarium is under construction at Las Cruces which will be a model of its kind. The purpose of the company is to erect a large main building, 42 by 100 feet, two stories high, containing twenty-two great rooms, library, dining rooms, and smoking rooms; the whole to be surrounded by large verandas, with a southern exposure. Within easy access are to be erected several single-story cottages, after the style of the Saranac Lake Sanitarium. It is hoped in time to make the main building an administrative building and all invalids to be housed in the adjacent cottages, following in the lines of other institutions of similar purpose. There is under consideration two more institutions of this character.

It has given much pleasure to the writer to see this part of New Mexico attract such attention from the medical profession. At the last two meetings of the American Medical Association, held respectively at Denver, Colo., and Columbus, Ohio, the writer presented papers dealing with the climatic therapeutics of southern New Mexico, and it was very gratifying indeed to note the general favor in which they were received.

That Donna Ana County has a bright future before it nobody will deny, for it possesses many of the requisites for securing such, not the least of which is its wonderful climate, attracting as it does the best class of citizens from all parts of the universe.

THE ELEPHANT BUTTES DAM.

The greatest setback this section has ever had was that resulting from the stopping of work on what is familiarly known as the Elephant Buttes dam. A brief history follows:

A company known as the Rio Grande Irrigation and Land Company, Limited, of London, acquired the rights of the Rio Grande Dam and Irrigation Company. The object of this company was to store the overflow waters and irrigate the Rio Grande Valley in the southern part of this Territory. Of this overflow water there is an immense quantity that goes to waste every year, as there are no dams on the Rio Grande to store these waters.

The general plan of this company was to construct a mammoth dam at the Elephant Buttes, near Engle, N. Mex., and form at this point the largest storage reservoir in the world. In addition to the large dam, a series of smaller ones were to be constructed, together with canals, and by this means bring under irrigation and cultivation hundreds of thousands of acres of the most fertile land on the continent.

Work on the smaller dams and canals was commenced in November, 1896, and continued until the spring of 1897, upward of $90,000 hav-

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ing been expended. At this point the United States brought suit to enjoin the company from building the storage dam. Work had to be stopped, and that already done was left in such a condition as to be subjected to great damage by the annual floods. The ground for seeking the injunction was that the Rio Grande was a navigable stream.

This claim is preposterous. The Rio Grande is not and never has been a navigable stream, except where it is affected by the tide. The true secret of the attack can be found in the effort of certain persons to have constructed at El Paso an international dam, and under the impression that the Elephant Buttes dam would interfere with their plans and monopolize the water, they oppose the enterprise. A careful investigation goes to show that, instead of the Elephant Buttes dam monopolizing all the water, the reverse would be the result, and the people at and near El Paso would have more water after its construction than before.

It is to be hoped that this question will shortly be settled, and the company permitted to resume operations, for with the completion of this work will blossom forth one of the richest agricultural, fruit, and dairy sections in the West. It will outrival California, and supply the East with a superior and better quality of fruits and vegetables than can be produced in any other section of America.

The superintendent of the public schools of Donna Ana County herewith submits a report of the condition of the public school districts within the county of Donna Ana, Territory of New Mexico, for the year ending October 1, 1898.

Number of districts, 28; number of teachers, 6 male and 22 female, total, 28; enrollment of pupils, 638 males, 444 females, total, 1,082; average daily attendance, 394 males, 295 females, total, 689; number of scholars between the ages of 5 and 21 years, 1,977 males, 1,661 females, total, 3,638. Average number of months taught, 4.

RECEIPTS.

Balance October, 1897	$2,851.68
From the county school fund	5,410.80
Poll tax, fines, etc	2,861.77
Total	8,272.57

EXPENDITURES.

Teachers' wages	$5,355.11
Rent, fuel, etc	458.99
Schoolhouse and grounds	1,095.32
Total	6,909.42
On hand	4,214.83

PRIVATE INSTITUTIONS.

Presbyterian Mission School: Value of property, $1,000. Enrollment of pupils—males, 45; females, 82; total, 127.

Visitation Academy: Value of property, $2,500. Enrollment of pupils—males, 39; females, 30; total, 69.

EDDY COUNTY.

The county of Eddy is fast demonstrating the fact that it contain within its boundaries all the possibilities for making it one of th greatest agricultural centers in the Southwest. That its vast irrigation system has had much to do with its present prosperity and the brilliant future that is now at its very doors, there is no manner of doubt. It was only when that system was first inaugurated that the

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SPILLWAY, EDDY IRRIGATION RESERVOIR.

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growth of the Pecos Valley really began, and it may truthfully be said that since that time the growth of the various industries in Eddy County has been phenomenal. It might be imagined that the one great interest that takes precedence over all others in this Western country, namely, that of cattle raising, could not be affected by irrigation. Nothing could be farther from the truth. Irrigation has brought cattle into the country by the thousand. It has concentrated the interests of their owners in their establishment of one of the largest shipping points in the Southwest at Carlsbad; it has been instrumental in making the town not only their headquarters, but also the home of many of them.

As to the live-stock industry in the county, it is estimated that during the past year it has been increased just one-third—that is to say, that the value, as well as the number of the herds and flocks, has appreciated one-third over the estimates made last year. The Pecos Valley and Northeastern Railway, the extension of which was opened for business between Roswell and Amarillo on the 24th of February last, report that during the spring they transported over their line from all points over 130,000 head of cattle. Of this immense shipment it is safe to say that at the least three-fifths originated at Carlsbad or in the territory tributary to it. Not only did the county show progress made by the number of cattle shipped, but a more valuable feature by far was made apparent—that the grade of the stock was equal, if not generally superior, to that of stock shipped from older communities south of here. This is explained by the fact that the cattlemen of the valley, having been generally successful during the past two years, have invested a large portion of their profits in the purchase of a higher breed of cattle than those of other districts. Proportionately as much fancy stock has come into Eddy County during the year as into any cattle county of Texas. Herefords are, and apparently always will be, the favorite here, and after them comes the Durham as a close second. A very conservative estimate of the number of cattle on the ranges of the county, or immediately adjoining it on the east, places the number at close to 500,000 head, in herds going from 1,000 to 60,000. When it is said that the owners of this vast number of food animals are actively breeding them up to a standard of excellence that will gain for them the very highest prices paid in the great cattle centers for choice beeves, some idea of the progress made in this one great industry alone may be arrived at.

As to the sheep industry of the county there is no doubt but that it has been nearly or quite doubled during the past year. The constantly advancing price paid for wool, the active demand from Kansas City and Chicago for alfalfa-fed lambs have had much to do with this, especially when the exceptionally fine feed for flocks is considered, and one other matter that is a powerful incentive to sheep men to bring their sheep this way, and that is the fact that so far as known this section is the only one in the entire West where there is no friction of any sort between the cattle raiser and the sheep man. The following item, taken from the American Sheep Breeder, of Chicago, sets forth in most unmistakable language reasons why southeastern New Mexico is shortly destined to become one of the greatest sheep-raising centers of America:

The importance of the sheep-breeding industry on the Pecos River is gradually but steadily increasing. South of here, on the Rio Grande—the great dividing line between the United States and Mexico, a muddy creek, dry for most of the year, and which cost the United States $13,000,000 in 1847 to establish as a national

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boundary line—there is to-day probably more sheep than in any other section of the United States of anything like the same area. From the proximity of this district to Mexico, and the facility with which sheep can be brought in from Mexico and the import duty evaded, it is very unlikely that the flocks there will ever be remarkable for anything but numbers, for although the "Dons" across the river have, for the past two or three years, been breeding up their cattle, the shipment of a well-bred lamb into the Republic is of anything but frequent occurrence. Mexican sheep to-day are practically what they were twenty years ago, or fifty, for that matter—straddling, rawboned animals, built for speed rather than for mutton. The appearance of a flock would suggest to one that it would take a dozen generations of careful breeding to bring them up to anything like the standard of the most ordinary animal seen on northern pastures.

Now this vast region, extending along the river for upward of 300 miles, and embracing within its area some six or eight of the largest counties of Texas, is virtually given up to sheep. Greaser and "Gringo" alike look for a living from their flocks, and the cattleman is decidedly in the minority. Notwithstanding all this, this district is not sought by progressive sheep men who raise sheep for mutton as well as for wool, and these men are gradually moving their flocks northward up the Pecos River into New Mexico. The advantages they derive from leaving the Rio Grande country are twofold: First, they lessen the danger of their flocks becoming mingled with the poorly bred Mexican animal, and so losing a year's labor and the expense they have been to in an effort to breed up their sheep; and next, from the fact that wild animals of the depredating sort are as plentiful on the Rio Grande now, or nearly so, as they were ten or twenty years ago. This is not to be wondered at, as sheep men are not nearly as apt to form clubs and pay scalp bounties to protect a sheep worth $1 to $1.25 as they would be if the same sheep was worth $2.50 to $3.50. Some of the stories of the depredations of coyotes, lobo wolves, panthers, and mountain lions among the flocks almost surpass belief. Whether altogether true, or only partly so, it is certain that the losses there from this source are greater than a man with a flock of even passably well-bred sheep could afford to stand. For this reason as much as for the one first named, the Pecos country is slowly filling up with a class of sheep men who mean to make the most out of their animals in a practical and businesslike way, and that, of course, means "breeding up" to a standard that makes mutton that will bring money in a market like Chicago. As a matter of fact, there are many sheep raisers, or rather woolgrowers, in northern Mexico or in extreme southern Texas, whose flocks are so particularly poor in blood that if a carload of them should be unloaded at the Union Yards in Chicago they would excite as much curiosity as so many coyotes would, and whose ultimate destination would be the soap factory. The Pecos Valley hopes in time to breed up its flocks as well as its herds, and the time is not far distant when a steer or lamb fattened on the Pecos River will carry with it a reputation similar to that which a Scotch turnip-fed steer or a Southdown commands on the London market.

The cultivation of the alfalfa clover and its prolific yield was the first product that drew attention to Eddy County. It, in fact, made it famous. The wonderful fertility of the soil, as evidenced by this one product, was so pronounced that even the attention of the Department of Agriculture was directed to the valley, and for three months of the present year this Department maintained two of its experts from its division of soils—Messrs. Means and Gardner—in this locality making exhaustive and critical tests of the different strata and noting the different products that appeared to thrive best in the various localities. Later in the summer the Department dispatched two others, attachés of the division of biology—Messrs. Higginson and Bailey—whose mission was to make an examination on the lands in the neighborhood of Carlsbad strictly with reference to their adaptability to the culture of the sugar beet. Their verdict, after a close examination, was that the sugar beet had its natural home in this county, and that the industry was as yet in its veriest infancy.

RAILROAD FACILITIES.

The completion of the Pecos Valley and Northeastern Railway to Amarillo, as noted above, now gives that road a total length of 370 miles, its southern terminus being located at Pecos City in Texas, on

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IRRIGATED EGYPTIAN CORN IN PECOS VALLEY.

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the Texas and Pacific Railway. It places Carlsbad within twenty-four hours' ride of Fort Worth and Dallas, Kansas City thirty hours, St. Louis forty-eight hours, and Chicago fifty-two hours. Connections are made with three trunk lines, two at Amarillo, the Atchison, Topeka and Santa Fe, and the Denver, and with the Texas and Pacific at Pecos.

THE CLIMATE.

The Territory of New Mexico has for many years been renowned for its perfect climate, its absolute freedom from all malarial complaints, and the wonderful effect it has in pulmonary diseases when not too far advanced. Men are living in Eddy County to-day who came here ten years ago to die. The equable weather, the dry and bracing atmosphere at once asserted their power and begun to heal the torn and bleeding lungs and quiet the troubled nerves. It is a climate, too, that appears to infuse new vigor both in the body and in intellect. The desire of the old Roman to have "Mans sano in corpore sano" (a sound mind in a sound body) finds its living realization on the streets of Carlsbad in the person of nearly every man that has made the valley his home for any length of time. The mean temperature of the summer is 80°, seldom exceeding that figure, and in winter 42°, while for spring and autumn it is 60°. The following from the pen of Dr. C. H. Wright, one of Carlsbad's leading physicians, verifies the above statement:

During the last few years the medical profession has made great progress in the study of climatology as a relief and benefit to nearly all constitutional diseases. The climate of southeastern New Mexico, and especially the Pecos Valley, is rapidly becoming known as a panacea for all bronchial and lung troubles, as well as great benefit to stomach and kidney derangements. This fact is thoroughly substantiated by the multitude of cures which have been effected here in the last ten years. The Pecos Valley has been well described as the natural sanitarium of the world, and why? First, because we have all the requisites to make a complete health resort, namely, a dry air, a pure air, an air of moderate temperature, not contaminated by passing over swamps or through large cities, but coming direct from mountain ranges, and contains nothing but life-giving elements. Second, we have what but few places in this region can boast of, pure water, as well as springs containing medical properties which are a benefit to stomach and kidney troubles. Last but not least, the almost perpetual sunshine. The absence of sudden changes of temperature is one of the strong features of this section, which is a great aid in all forms of diseases or weakened conditions.

During the last year the county of Eddy has had no more deaths among the residents from disease than you could count on your fingers, which speaks well for a population of over 3,000 inhabitants. Although we have had an epidemic of measles which traversed the whole county during March, April, and May, there has not been a death reported either from the disease itself or complications, which is sufficient proof that not only is the climate a benefit to chronic troubles but greatly modifies the acute infectious diseases. One coming to the valley for the first time from the north must evidence surprise at how little he suffers from the heat. We have no sultry days followed by more sultry nights. The nights are clear, cool, and refreshing. The population of Carlsbad and surrounding country is largely made up of people in search of lost health. To-day they are energetic, strong, and enjoying the best of health. These are our best advertisements. In my two years' practice here I have not seen a single case of pulmonary trouble but what was benefited by the climate, and I believe my fellow practitioners will testify likewise. The great point for physicians sending patients here for beneficial effects of this climate is not to wait too long. But all cases of pulmonary trouble will be benefited if the decided firm grip of death does not expect to claim him in a few days.

MINERAL SPRINGS.

About a mile northwest from the town of Carlsbad, on the banks of the Pecos River, is a group of springs that in times past were thought to be remarkable merely from their unparalleled flow of water, two

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the largest emitting a stream at all seasons, wet or dry, of over 5,000 gallons a minute each, and the others of lesser amounts. A year or more ago, it having been noticed that the water of the larger of the two springs appeared to be strongly impregnated with minerals, it was suggested that it be analyzed. The result was that the waters were found to be almost analogous with those of the great mineral spring at Freidrickshalle, in Germany. The spring was then named Carlsbad. The rapidity with which the healing qualities of its waters became known, the almost instant relief it gave to stomach and kidney troubles that had stubbornly resisted medicine, and its effects on rheumatic complaints called so much attention to this locality that it was determined to change the name of the town, then known as Eddy, to the name of the spring, Carlsbad. This change was effected by a popular vote on the 23d day of May of the present year.

GEOGRAPHICAL SITUATION.

Eddy County lies between the thirty-second and thirty-third degrees of latitude, the two degrees forming almost exactly the northern and southern boundaries of the county. Its altitude is 3,200 feet. It extends north and south 66 miles and east and west 95, being rectangular in shape and containing about 6,300 square miles. Of this area the lands bordering on the Pecos River, extending from 3 to 10 miles on either side, are of extraordinary fertility, producing, wherever water is introduced, every cereal, vegetable, and fruit known to the temperate zone in abundance and with unfailing regularity. The balance of the land is strictly pastoral, and the nutritious grasses with which it is for the most part covered are producing now as excellent cattle as are to be found anywhere in the Territory.

THE IRRIGATION SYSTEM.

This all-important feature in the development of the country is naturally the first one about which inquiries are made by prospective immigrants or investors. Taking the irrigation system of the valley as a whole, it is beyond all question the largest in America, and the immense sums that have been expended on it make it the most complete as well. In Eddy County there are two large artificial lakes, covering a superficial area of some 10,000 acres, with a capacity of 100,000 acre-feet—that is to say, holding sufficient water to place 1 foot of water on 100,000 acres of land. There are now in active operation 40 miles of canals and main laterals, so arranged that at any time they can be extended in any direction. The main canals are from 30 to 45 feet in width, and constructed in the most substantial manner. The annual water rent imposed by the irrigation company of $1.25 per acre is said to be the smallest fee for similar service in the United States, and thus far in its history this company has never caused a dollar in loss to its customers by a failure to supply them when needed.

PRODUCTS.

It may be said that up to this time the soils of Eddy County have developed peculiar fitness for four different products, all of which they produce when properly irrigated, with regularity and in abundance. These are fruit, alfalfa, vegetables, and the sugar beet. It is to these that the county thus far has looked for its permanent and positive advancement as an agricultural center.

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As to its fruits, while nearly every variety thrives and makes rapid growth, the peach produces most abundantly, and in size, flavor, and appearance it fully equals any raised in the country. The orchards are absolutely free from bugs or fruit pests, and a specked or wormy peach or apple is unknown. During the present year from the Rio Pecos orchard alone, an orchard covering but 16 acres, over 3,000 boxes of the very finest fruit will be shipped, and the demand is such for fruit from this section that not one-half of it can be satisfied.

Alfalfa produces on an average 5 tons to the acre annually, in four and sometimes five cuttings, and what might be called almost the standard price for the hay in Carlsbad is $10 a ton, with a demand that usually exceeds the supply. Many cattle feeders who this year propose fattening cattle and sheep are leasing alfalfa pasture for which they pay $5 an acre for the season. Beef and mutton fed on this sweet and nutritious clover acquire a flavor contributed by no other fodder.

Of the minor sources of revenue—that is to say, those requiring a smaller capital to start them—the raising of vegetables presents a field of profit in this country for which it would be hard to find a parallel anywhere. In the first place, there is always a large home market, and the prices obtained are always highly satisfactory to the grower. One man last season cleared $5,000 on 20 acres of celery. As to asparagus, there is just sufficient alkali in the soil to not only render the cultivation of this esculent very easy but highly profitable as well. It matures in the spring fully a month earlier than in the North or in Texas, and consequently commands a high price. Other vegetables, in fact nearly every sort, thrive in the rich river bottoms of Eddy County, and with a few acres, 5 or 10 at most, a man with a little money for seed and a few farming implements can not only make a good living the year round, as the soil can be worked to advantage here every day of the 365, but he can in a short time render himself independent of the world.

In conclusion it can be said that it takes no prophetic eye to foretell the future of this country. The evidences are at every hand, standing forth legible as the hills, clear as the noonday. Wherever the hand of man has introduced water upon these hitherto arid wastes he changes them into fertile and productive fields, rich with the fruits of the earth. He stands astounded at the result of his own handiwork. He finds that here amidst the brown hills and the sage-brush deserts of the Great West an oasis of shade and verdure has appeared, destined, like the great banyan tree of the forest, in the coming years to yield shade and fruit to wide neighborhoods of men.

GRANT COUNTY.

The past year has been one of unprecedented prosperity in Grant County. The two principal industries of the county, cattle raising and mining, have proved more than ordinarily profitable. The high prices obtaining for cattle have enabled many of the stockmen to acquire residences in the cities and towns, where they avail themselves of the greater educational facilities for their children.

In mining phenomenal success has been attained. Never in the history of any of the Western States and Territories have there been made such rapid strides in the development of the wonderful mineral resources of the West.

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Taxable value of real estate.

RAILROADS.

Narrow gauge:		
30 miles main track	$75,000.00	
1 mile side track	1,500.00	
Buildings, tools, etc	4,125.00	
		$80,625.00
Southern Pacific Railroad Company		
91.30 miles main track	639,100.00	
9.07 miles side track	10,820.00	
		649,920.00
Atchison, Topeka and Santa Fe Railway Company:		
10.98 miles main track	71,370.00	
4.62 miles side track	5,544.00	
Silver City Branch:		
48.29 miles main track	217,305.00	
3.90 miles side track	4,680.00	
Silver City and Northern Branch:		
14.50 miles main track	43,500.00	
0.97 miles side track	970.00	
Buildings, tools, etc	11,020.00	
		354,389.00

TELEGRAPH LINES.

Southern Pacific Company, 91.30 miles single-wire telegraph line	$2,280.00	
Atchison, Topeka, and Santa Fe:		
4-wire telegraph line	439.20	
1-wire telegraph line	120.25	
Western Union, 90 miles, 3 wires and instruments	3,180.00	
New Mexico and Arizona Telegraph Company, 30 miles single wire	750.00	
		6,769.45
		1,091,703.45

AGRICULTURAL LANDS AND IMPROVEMENTS THEREON.

Irrigating ditches, 1½ miles	$150.00	
Grazing land value	40,270.00	
Improvements	58,520.00	
Agricultural land	80,547.00	
Improvements	107,055.00	
		281,542.00

TOWN PROPERTY.

City lots	$151,520.00	
Improvements	396,350.00	
		547,870.00

Taxable value of personal property.

Horses	$98,670.00
Mules	4,080.00
Beef and stock cattle	1,101,700.00
Sheep, graded	8,775.00
Swine	2,080.00
Burros	760.00
Wagons, carts, trucks, carriages, and vehicles of all kinds	38,720.00
Saddles, robes and blankets, harness	9,160.00
Sewing machines	9,170.00
Average value of merchandise during year ending March 1, 1899	123,410.00
Amount of capital employed in manufactures	2,000.00
Farming implements	2,910.00
Fixtures of saloon, office, or other business places	28,420.00
Money on hand	1,075.00
Books—law, medical, miscellaneous	3,710.00

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Watches and clocks	$1,590.00	
Jewelry, gold and silver plate	3,985.00	
Musical instruments	5,300.00	
Household furniture	45,280.00	
Shares of stock in national or other banks	54,400.00	
Corn	450.00	
Hay	150.00	
Lumber	625.00	
Steam engines	3,500.00	
Sawmills, flouring mills (steam)	2,500.00	
Tools—carpenters', blacksmiths', etc	1,425.00	
Mines, surface improvements	84,968.00	
Mines, net product	13,800.00	
Credits—notes, book accounts, etc	1,680.00	
		$1,654,293.00
Total		3,575,408.45

The foregoing table represents but a tithe of the real value of property in Grant County. In the above estimate, taken from the assessment rolls of the county, cattle are valued at $11 per head, this value being fixed by the board of county commissioners, while the same cattle are eagerly sought by buyers at prices ranging from $16 per head for yearlings to $24 per head for full-grown stock.

The enormous values of mining property are absolutely without taxation except the improvements, as buildings, mills, etc., upon the mines. This is by reason of a Territorial law passed to encourage the development of the mineral resources of the Territory, and whereby mines are not subject to taxation until ten years after a patent for the land has been obtained from the United States Government. As few of the mines are patented, and fewer still have been patented for ten years, this great property value does not yet take a place in the taxable values of the county.

It will also be seen that the taxable valuation placed on railroads and other properties is low. Hence, while the rate of taxation may seem high to people of the East, yet it is in reality no higher than in other parts of the United States.

AGRICULTURE.

The agricultural resources of Grant County are but little developed, and yet the area under cultivation would supply an abundance of food products for the inhabitants of the county if properly managed and cared for. The principal agricultural section of the county at present is on the Mimbres River, a small stream situated in the eastern portion of the county. There are now about 20,000 acres under cultivation upon this stream which furnishes the water for irrigation.

It is proposed to build a system of storage reservoirs which will store sufficient water to irrigate 100,000 acres of the choicest land in the West, which lie just below the site chosen for the main dam. Negotiations have been completed whereby the company will acquire title to this land, and within a few months work will be commenced upon the dam and reservoirs. The land will be colonized with thrifty farmers from the East, and hundreds of thousands of dollars now sent annually from this county to Eastern States for hay, grain, poultry, eggs, butter, and other farm products will be kept at home.

The company is composed of Chicago capitalists, and is known as the Rio Mimbres Dam and Irrigation Company, with A. R. Burkdoll as resident manager. The company now has a lesser experimental

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irrigation system at work, and has 1,000 acres of land under cultivation. Here there is found the first producing canaigre farm in the United States. The cultivation of this crop is bound to soon prove a profitable and extensive industry, as it has been fully demonstrated that the valley of the Mimbres produces canaigre of superior quality to that grown in any other part of the world. The poorest of the many samples analyzed for the Rio Mimbres Dam and Irrigation Company gave returns of 30 per cent of tannic properties, while the canaigre tubers grown in other localities give 11 to 25 per cent of tannic values. This company has 200 acres in canaigre. As the canaigre tuber at two years' growth produces 12 tons per acre, and the product is worth $6 per ton upon the ground, when dug, it is plain that a canaigre crop is a very valuable one, and is obtained with less labor than is generally expended on other crops which give anything near as good cash returns.

There are thousands of acres upon the Mimbres producing fruit of superior quality, the peaches and apples competing successfully with those raised in the States, as, in fact, many carloads of apples especially have been shipped to the East and to Arizona. Fruit grown in the foothills of the Mimbres Mountains may have equals elsewhere, but superior it would be difficult to encounter. A fortune awaits the happy man, who, having the means, has the business foresight to erect a canning plant in that neighborhood.

On the Gila River, to the north and west of Silver City, there are about 5,000 acres under cultivation, one-fifth of which is operated by the Gila Farm Company, which, besides raising all of everything required for home consumption, produces all kinds of fruits of the finest grades obtainable anywhere. A small apiary on this farm produces 10 tons of honey annually. With storage reservoirs and dam properly constructed the area of tillable land along the Gila could be increased to 50,000 acres.

LIVE STOCK.

The cattle interests of Grant County are by no means an insignificant feature of wealth, amounting as they do to a considerable sum of money yearly to the thrifty stock grower. Grant County is by far in the lead of any other section of the Territory in this important industry. The shipments for a number of years past have been unusually heavy, that of 1898 aggregating in round numbers $1,000,000 in value. Silver City is the largest shipping point for cattle in southern New Mexico, and during the busy season the festive cow puncher is a familiar sight upon the streets. The stock yards south of the city are large, easy of access, and supplied with all the modern conveniences. Stock from all the northern and western sections of the county ship from here, as also frequent shipments from southern Socorro County. The Santa Fe system pays special attention to this large and lucrative branch of their business.

The recent rise in the prices for beef cattle has proven an incentive to stock growers, and they are consequently giving the subject of better beef their strictest attention. The stock cattle of this immediate vicinity are of a high grade, and the profits are accordingly great. Prices have been good, ranging from $16 to $18 and $22 for yearlings, twos, and threes. The ranges, both mountain and valley, are good this year, as rains have been abundant and cattle had fared well during the winter last past. Sheep and goats, of which there are quite a number in this county, have proven remunerative to their

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owners as food producers, while the wool and cashmere fleeces have been disposed of at fancy figures. The stockmen of this section all wear smiling countenances, and some of them diamonds. Their bank rolls have increased amazingly during the past six months, and fall sales promise to greatly add to their already plethoric purses. Cattle passed through the winter well and the calf crop this year is good. The outlook is decidedly encouraging and the stockmen accordingly in happy spirits.

Hog raising has hardly as yet become a distinctive industry, although there are several small concerns in operation in the Burro Mountains, where mast is plentiful. A few farmers along the Middle Gila who raise corn extensively and who have no immediate market for their crops put it into pork, which readily brings 5 and 6 cents per pound in Silver City.

There are a few extensive horse farms in the county, but they are mostly conducted in connection with the cattle ranches, as riding ponies are a prime necessity to the cow man and are constantly in demand to replace worn out and aged stock.

HOT SPRINGS.

There are a number of mineral springs in the county, some of which have proven to possess remarkable medicinal qualities. The celebrated Hudson Hot Spring, located about midway between Silver City and Deming, on the line of the Atchison, Topeka and Santa Fe Railroad, has already achieved a wide reputation as a health and pleasure resort. The temperature of the water registers 142° F., and is almost a sure cure for rheumatism, blood and kidney diseases, and various other complaints.

The hotel accommodations are of a superior quality, and during the summer months no more delightful pleasure resort can be found in the country.

The Gila Hot Springs, 50 miles north of Silver City, are much sought for their medicinal qualities, but the accommodations are not as good as they might be. Camping, hunting, and fishing parties to the higher Mogollon country frequently make this a stopping place, and the ladies of the party enjoy themselves here while the men folks go up into the mountains after large game, which can be found in abundance.

SILVER CITY.

The county seat of Grant County is located in a pretty mountain valley surrounded on all sides by rolling hills, which serve to protect it from high winds. The altitude is 6,021 feet above sea level; the average yearly rainfall for a period of twenty years was 14.18 inches; the mean annual temperature is 55°, the average for the summer months being 72°. On the coldest of winter nights the thermometer rarely falls lower than 12° or 15° above zero, while the days are always temperate, ranging from 45° to 70° in the middle of the day.

In summer time the thermometer ranges from 70° to 90° during the day, seldom reaching 96°, while the nights are delightfully cool, having an invigorating effect upon the system. These temperatures, taken in connection with the dryness of the atmosphere in this latitude and at such an altitude, renders it one of the most delightful climates of the world, its recuperative and health restoring properties being attested by thousands who have come from other climes to enjoy its beneficial effects.

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It is a thriving and prosperous town of 3,500 inhabitants, the American element largely predominating. The population of Silver City will, in point of intelligence and education, compare favorably with that of any town of like size in the world, and it is fully equal, if not superior, to any community in the United States as a law-abiding body of citizens. Larceny, burglary, and kindred crimes are comparatively unknown, while civility and politeness mark the demeanor of all whom you meet.

It is one of the most substantially built towns in the United States, brick and stone being used exclusively—not a frame building within the city limits. There are four churches, Methodist, Episcopalian, Catholic, and Presbyterian, each of the edifices being a credit to the congregations which built them.

The educational facilities are better than in most towns of similar size in the Eastern States. The first public school in the Territory was organized here, and to-day has a very large attendance. Besides the public school, the Territorial normal school is located here. The institution is one of the best in the country, its fame as a thorough training school for teachers inducing pupils from other States and Territories to come here to complete their education and training in their chosen profession. The Sisters of Mercy conduct the Academy of Our Lady of Lourdes, where many Catholic children receive a liberal education under the beneficent care of the good Sisters.

Silver City is the supply point and distributing station for a large area of territory, which thus becomes tributary to it. It is thus rendered a very prominent mercantile as well as financial center, and a great amount of business is done by the merchants, as also an enormous volume of financial exchanges is transacted through the medium of the Silver City National Bank, a conservative banking house wherein all the most approved business methods are in vogue.

The city has a first-class waterworks system, as well as an electric-light plant of the latest improved design, each owned and operated by a private corporation. All of the most modern conveniences and luxuries of civilization are enjoyed by the residents of Silver City.

DEMING.

The second town in population and commercial importance of Grant County has 2,000 inhabitants. It is a port of entry for cattle and other imports from Mexico. It has a fine schoolhouse and a good corps of teachers, and the attendance is quite large. A very large area of cattle-raising country, extending 50 miles south to the Mexican boundary line, is tributary to this city of the plain, as also the following mining camps find here their base of supplies and mercantile center: Hachita, Volcano, Apache, Tres Hermanas, Cooks Peak, and Florida. It has two churches with comparatively large congregations, an opera house, waterworks system, with the purest water found in any town in the world, and all modern conveniences.

The town site is laid out upon one of the most attractive and desirable plateaus of the Southwest, having an altitude above sea level of 4,800 feet. Situated as it is at the junction of two great continental railways—the Atchison, Topeka and Santa Fe, and the Southern Pacific, which span the continent—and the Sierra Madre and Pacific, and the Sonora, Sinaloa and Chihuahua roads now under active construction, which will afford practical means for the development of the great industrial resources of the States of Sonora, Chihuahua,

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and Sinaloa, in northern Mexico, it is especially designed to offer every inducement to the various manufacturing interests of the country, the best facilities for handling the enormous amount of traffic growing out of the development of the great mineral, agricultural, and pastoral resources tributary to Deming.

Commercially considered, the location gives to the town superior advantages, and the completion of the Southern lines of railroads into the Republic of Mexico, in connection with those already established, will give to Deming the prestige of being a center of wealth, of commerce, and manufactures in a Territory whose area is an empire in extent, the resources of which embrace every known article used by civilized man.

MINES.

The mountains, which occupy fully one-fourth of the area of the county, are pregnant with all of the minerals and metals most useful to mankind. Gold and silver have been produced from the mines for a quarter of a century past, while Grant County is proud of the distinction of having the oldest copper mine in the United States—the Santa Rita del Cobre, which was worked by the Spaniards more than a century ago. Enormous veins of the richest and purest iron occur at several places, hundreds of tons of the ore being shipped daily to the iron and steel works at Pueblo, Colo., and to smelters at other points.

Ranking first among the mining facilities of Grant County should be enumerated the Silver City Reduction Works. This smelting plant, which one year ago was handling 60 tons of ore per day, has grown in capacity, as it has grown in favor with the miners of the Western States and Territories, until it now has a capacity of 240 tons per day. It draws its ore supplies from all parts of New Mexico, from Arizona, Utah, Colorado, California, and Old Mexico. This rapid progress and success is due to honest, capable, and efficient efforts of the officials in control of the concern. The works are owned by the Hearst estate, with Bev. Risque as president of the reduction company and S. E. Bretherton as general manager. It gives the miners a home market for their ores and saves the cost of transportation to distant smelters.

By the use of very recent improvements, patented by members of the company, the cost of smelting has been reduced to the minimum, and the saving thus made is shared with the miner, which in a great measure accounts for the rapid growth of the works.

SANTA RITA.

The copper mines of this district are proving to be of phenomenal richness and extent. This wonderful body of ore is without parallel in size, and the percentage of copper greater than in any large copper mine known. Geologically, it is an isolated occurrence, conforming to none of the heretofore conceived ideas of formation of ore bodies.

The area occupied by this enormous mass of ore is fully 1 mile square, the entire mass being ore which can be profitably worked, with the exception of three small vertical bands of quartzite which contain no ore. All the balance of this great mass is ore, and ore of superior quality to the average of the copper-producing mines of the world. These mines gave employment to 400 men from January until June of this year, and many thousands of tons of rich ores were extracted,

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many carload lots giving returns of from 60 to 75 per cent copper, while the average of all ore shipped was a fraction over 20 per cent copper. In June the property changed ownership, being purchased by Messrs. Rockefeller, Burrage, and associates for a cash consideration of $1,400,000. A corps of mining, mechanical, electrical, and civil engineers and experts are now upon the ground making plans for the erection of one of the most complete plants ever erected for the extraction of copper. It is safe to say that upon the completion of these works Santa Rita will rank among the greatest copper-mining districts of the world.

These mines are the oldest in the United States, having been worked by the Spaniards from the early part of the present century until the Territory was ceded by Mexico to the United States. Millions of pounds of copper were extracted and the metal shipped, on mules, to the City of Mexico. Two of the old forts, erected by the Spaniards for defense against Indians, are still standing, and the old dumps at the mine cover hundreds of acres, demonstrating the extent of the great excavations below. In later years the mines were worked intermittently by Americans, many of the ventures being failures on account of being harassed by the Indians, one firm losing nearly $250,000 by raids of the redskins. And thus these mines had an eventful though not always a prosperous career, until two years and a half ago when Arthur E. Dawson took charge as general manager of the property for J. Parker Whitney, of Boston. By indefatigable effort and economical management, without a dollar of capital, he put the mines on a paying basis. The dividends from the property continued to grow larger and the mines to attract more and more attention from capitalists until they finally purchased the property at the figures given above, and now it bids fair for Grant County to have at Santa Rita the greatest copper mine in the world.

PINOS ALTOS.

The old Spanish records in the custody of the Mexican Government at the city of Chihuahua tell of the discovery of gold at Pinos Altos by Gen. Pedro Almendaris, one of the early commandantes of the Mexican fortress at Santa Rita, distant 12 miles east, and where were situated the famous Santa Rita copper mines. The first discovery of gold by Americans was made on May 18, 1860, by Messrs. Birch, Shively, and Hicks. The camp was first called Birchville, in honor of Birch, who was the first to find the precious metal. Within six months 700 men were in camp looking for the gold lucre. In 1861 quartz mining was commenced, the Atlantic and Pacific lodes being located. Many other quartz veins were immediately located, the ores being reduced and the gold recovered by grinding and amalgamation in arrastres. From twenty to fifty arrastres were kept in constant operation until 1866, producing in the neighborhood of $300,000. Adding to this the gold produced from the placers, and the total of gold produced in the first five years would amount to over $500,000. Considering the crude facilities for operating the mines and the perpetual dread and uncertainty caused by frequent Indian attacks, it was a remarkably good showing. In 1866 a 15-stamp mill was erected by Virgil Marston. This, the first modern machinery in the camp, was quickly followed by other mills of the same kind, which were kept in constant operation upon the oxidized, free-milling ores from the surface of the veins. As depth upon the veins was attained the sulphureted

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ores were encountered, which proved a serious obstacle to the amalgamation of the gold by the processes then in vogue.

In 1883 concentration of the sulphurous ores was attempted by Messrs. Place & Johnson, but the process was a failure for lack of experienced operators. In 1884 Peter Wagner made a success of the concentration process upon the ores of the camp, and the same year Messrs. Bell & Stevens purchased and put in successful operation the Place & Johnson concentration plant, which had heretofore been pronounced a failure. From that time until last year the ores have been worked by amalgamation and concentration of the tailings, the concentrated product being shipped to the smelting works.

The several claims upon the Pacific vein which were purchased by the Hearst estate two years ago have been systematically exploited, under the superintendency of B. B. Thayer, an experienced mining engineer. Several shafts have been sunk upon these claims, one of them having attained a depth of nearly 1,000 feet below the upper workings at the apex of the hill. The ore body exposed is probably the most continuous, both vertically and laterally, that has ever been developed in any gold mine. The width of the vein varies from 6 inches to 10 feet, while the gold value will average about an ounce per ton. A pipe line has been built to bring water from the Gebhardt Springs, 8 miles away. A mill of 60 tons capacity is now in course of construction and has an assurance of a long and successful run, as more than sufficient ore to keep the mill steadily employed for five years is now blocked out and ready for extraction. It is probable that the mill capacity will soon be increased, if it be found that the water supply is sufficient. In the meantime a 10-stamp mill is working steadily upon the ore extracted in development work.

The Atlantic and Deep Down mines are being developed by Gillig & Co., of New York City, who purchased the properties from the Treasure Mining Company, a Denver corporation, that worked the property for two years at a good profit.

The Golden Giant, Rathburn, Langston, and other properties have been constant producers of gold bullion for many years and have added their share to make up the millions which the camp has produced.

HANOVER.

This camp is a mineral wonder, both as to variety of ore and extent of ore bodies. Here are found enormous veins of iron from 10 to 50 feet in thickness. From two of these mines the Colorado Fuel and Iron Company are shipping 200 tons per day, and this output will be largely increased on the completion of the railroad to the mines, which will be about October 15, 1899. Large quantities of copper ore are being shipped from the Modoc group, the Humboldt, Hanover, and numerous other mines. Manganese occurs in large quantities, and lead ores have been profitably mined here. Like its close neighbor, Santa Rita, its greatest wealth is in copper, the production of which is increasing at a rapid rate.

CENTRAL.

This district really comprises within its boundaries the mining camps of Santa Rita and Hanover, but the name is more especially applied to designate the locality immediately contiguous or within a few miles of the town of Central. Here are found several lead, silver, and gold mines. The principal mines of the district are the Texas and Grand Central, owned by the Bayard Milling and Smelting

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Company, a company of Philadelphia capitalists, represented by H. Niles as resident manager. These mines have been developed to a depth of 500 feet, showing a large vein of ore rich in gold and silver and proving the permanency and value of the veins of the district in depth. A concentration mill upon the mines is being successfully operated.

OTHER MINING CAMPS.

Chloride Flat, 3 miles from Silver City, has produced over $3,000,000 in silver; even at the present depreciated price of silver several of the mines are paying well.

At Alhambra, the Alhambra mine is being worked and very rich silver ore is being extracted.

At Victoria, large bodies of high-grade lead ore have been extracted from the mine which gives its name to the camp. Wolframite, a rare and valuable mineral, is also found here.

At Stein's Pass, Granite Gap, Hachita, and Volcano rich lead and silver mines are being opened and are producing large profits.

At Gold Hill, the Reservation, Standard, Nancy Lee, and other gold mines are producing bullion.

At Paschal, in the Burro Mountains, several copper mines are being profitably worked for the higher grade ores, which are shipped to the smelters, while other very large bodies of lower grade ore are awaiting the advent of capital to erect suitable reduction works upon the ground, when these ores can be mined and copper produced at a very large profit.

The prospects for the immediate future of Grant County could not possibly be brighter. Prosperity reigns throughout the county, no boom nor excitement, but everything on a substantial and paying basis, with still greater prosperity assured from day to day as the resources of the county are developed more and more.

GUADALOUPE COUNTY.

Guadaloupe County, the banner grazing county of the Territory, with hundreds of thousands of acres of land of the very finest for settlement, offers unexcelled opportunities to the home seeker. Almost the whole eastern part of this county, embracing part of the so-called staked plains, is covered with the finest of grama grass. Water is found within a few feet of the surface, and it needs only the master hand of man to create a veritable paradise here.

As a sheep country Guadaloupe County is ahead of them all. The finest improved Merino herds are found here, and the wool produced is without doubt the finest in quality and strength of staple. Next to the sheep industry comes that of cattle, both of which are successfully carried on in this county.

The agricultural crops of Guadaloupe County are alfalfa, fruit, and cereals. Apples and pears here excel in flavor and size, being similar to fruit raised in California.

As yet little efforts have been made to develop irrigation enterprises. In this direction most excellent opportunities are offered, especially at Fort Sumner, where 12,000 acres of land could be irrigated at nominal cost.

Puerto de Luna, the county seat of Guadaloupe County, has a $20,000 court-house, several large stores, good schools, and about 1,500 people, and is the center of a fine stock and agricultural section.

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The Pecos River, with its excellent ditch system, furnishes an abundant water supply to this section of great promise.

The climate is mild and the altitude is such (being about 4,000 feet above the level of the sea) that a more desirable locality can not be found anywhere for sheep and stock raising. Sheep raising has been a most important industry here, particularly with the native people. Cattle raising is fast becoming one of the principal industries, and it is meeting with much favor and success.

The mineral lands found in this section embrace gold, silver, copper, coal, and iron. Coal has been found, and is of good quality.

Oats, potatoes, barley, and timothy are chiefly grown, and the ranch houses and homes for live-stock raising are numerous. As a live-stock country this locality is specially adapted to the raising of horses.

But as a pleasure and health resort this locality has become famous. The scenic effects are grand. The country is wild and broken, and much game abounds, including bear and deer, while the streams are literally alive with mountain trout running as high as 5 pounds in weight.

Splendid pine forests cover the mountains and mesas, and the timber industry is a most important and growing one, and in the near future, with some investment of capital, Guadaloupe County will come to the front in the development of her resources.

LINCOLN COUNTY.

Lincoln County is situate in the southeastern portion of New Mexico, and embraces an area of nearly 5,000 square miles since the last division of it, when the entire southern portion of it was set off to the new county of Otero.

The general surface of Lincoln County is comparatively level, but broken here and there by detached ranges of mountains, rendering it one of the most desirable, as well as picturesque, portions of the Territory of New Mexico.

The climate of this section is an ideal one, being far enough south to avoid any very severe cold weather during the winter, and the altitude, combined with the cooling rains which almost invariably prevail through July and August, render outdoor life peculiarly delightful during the summer and fall, and make it a veritable "promised land" for the home and health seeker.

This county at present has a population of about 9,000 inhabitants and an assessed valuation of $1,608,226, or a fraction over $24.72 per capita. When we take into consideration the fact that it is almost universally conceded that the assessment rolls never represent more than 60 per cent of the actual value of the property, these figures make an extremely favorable showing as to the financial standing of the people in this county.

The principal industry thus far has been the raising of live stock. The ranges in this section are well sheltered by foothills and numerous belts of timber, and the grass is abundant and nutritious, so that stock thrive well the year round, making cattle as well as sheep raising here not only safe but highly profitable. The latest estimate, made just prior to June 1, 1899, places the number of cattle on the ranges of the county at 41,046 and their value at $451,511. This, however, can not be considered a fair showing, as most of the ranches had made their usual spring shipments prior to the time the list was

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made out, one firm alone having shipped 28,000 head of cattle in March previous, which was more than one-half the total estimate in June.

Of sheep there were 64,390; goats, 7,787; horses, 2,780; mules, 102. There were also 257 burros and 4,148 hogs in this county listed for taxation. Owing to the long distance from a suitable market but little attention has heretofore been given to agriculture. Only enough grain and vegetables have been raised to supply the local demand. The county now has 10,883 acres of land under cultivation, the larger portion, of course, lying along the watercourses and subject to irrigation, though in certain localities, notably along the eastern foothills of the White Mountains, a large tract has been producing abundant crops for the past five years without any moisture whatever except that retained by the soil from the winter snows and the annual rains. There can be no possible doubt that deep plowing, with subsoiling and thorough cultivation, would cause much of the land in this region, especially that contiguous to the mountain ranges, now classed as "arid," to grow most of the cereals and all kinds of vegetables at a very fair profit. No finer fruit, either in size, quality, or flavor, can be produced in any country than that gathered from the orchards around the White Mountains in Lincoln County. Now that a market has lately been opened up by the coming of the railroad, fruit raising will receive much more attention, and in a few years will form quite an item in the freight shipments to El Paso and other points.

The phenomenal success of the Coe Brothers, on the Rio Ruidosa, A. C. Austen and P. G. Peters on the Rio Bonito, Mrs. S. E. Barber on the Three Rivers, and many others throughout the county, has stimulated other ranch owners in their vicinity to plant extensive orchards with the best varieties of fruit trees adapted to the soil and climate, so that the time is not far distant when the valleys and even waste places will burst forth into a fragrant cloud of peach and apple blossoms.

Lincoln County is, perhaps, more abundantly favored by nature than any other section of equal scope in the Southwest. Aside from its vast areas of grazing and agricultural lands, which are as yet but little more than half utilized on account of an inadequate supply of surface water, its other resources are enormous. From the Gallinas Mountains on the north to the White Mountains on the south, a distance of about 80 miles, there lies a practically inexhaustible mineral belt. There is not a mountain range within its border where the precious metals, in some form, do not crop out on the surface. This fact has been well established for years, but the long distance from any line of railroad communication has prevented the development of these vast resources of wealth, as the transportation of other than gold ore was made impossible.

Only in cases where the deposits have proven to be so enormously rich that they have paid for their own exploiting from the surface down, and a dividend besides, has the work been prosecuted with any kind of system or continuity. It can be safely asserted that no mine in this whole mineral belt, with one or two exceptions, is being worked at the present time where the output of the mine itself has not paid the expense of operating and development, together with the cost of machinery for reducing the ore.

The Old Abe mine at White Oaks is an example in point. This mine is now down to the 1,200-foot level; no water has yet been encountered, neither is there any intense heat perceptible. This is probably the deepest dry mine in the United States. At this great

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depth the vein is less broken than near the surface and carries about the same amount of free milling ore with a large increase in the value of the refractory ore. It has always paid a handsome profit over the ordinary mining expenses when systematically and economically worked. During the past year the present management has purchased a coal mine, and put in working order for supplying the necessary fuel a 50-ton cyanide plant to work the tailings as they come from the mill, with many other improvements, and the mine has paid for them all with ore taken from development work, as but little sloping has been done.

The North and South Homestake mines in the same district are down to the depth of 1,000 feet and 600 feet, respectively, with a large amount of underground development work, and always paid a handsome dividend when properly managed.

The Lady Godiva, Little Mack, Rip Van Winkle, and many other mines in the White Oaks district, have been exploited sufficiently to show that they are of about the same character as the mines already demonstrated by deep workings.

In the Jicarilla Range, 12 miles northeast of White Oaks, the gulches are full of placer gold, estimated at several million dollars, but as yet are worked only in a crude, spasmodic way, owing to the scarcity of water, which has to be hauled several miles in order to obtain the gold by panning. This when obtained is rather coarse and almost pure. A plan is now on foot to pipe the water from the Capitan Mountains, a distance of 21 miles, in sufficient quantity to wash out this gold by hydraulic process.

In the Gallinas Mountains, still to the north, there are many fine prospects carrying copper carbonates and sulphides; also lead carbonates and galena, carrying as high as 40 per cent lead and 20 per cent silver per ton. This is comparatively virgin ground on account of the long distance from any base of supplies and the expense of shipping ore.

In the central eastern portion of the county is the El Capitan range of mountains almost entirely unprospected, although some very fine ore, carrying both copper and gold, has been located in that region.

The Nogal and White Mountain ranges, in the southern end of the county, contain a veritable network of mineral-bearing leads, much of it low grade, it is true, but in immense bodies, which, after all, are considered the more valuable in the eyes of experienced miners. Among the more productive mines in this Nogal district might be noted the American, where its original locator, Billy Gill, ground out a fortune with the aid of a mule and an arrastra; the Hellen Rae, from which old man Rae carried a gunny sack of ore down to his cabin daily and pounded out enough yellow metal in a mortar to wear a silk hat and a syndicate smile the remainder of his days, and then sold the claim to St. Louis parties for $10,000. The owners have since put in a reduction plant.

The Hopeful, generally called the Parson's mine, where a mountain of low-grade ore lies dormant because the heirs could never agree to work it themselves or fix a price on the property so that its volume of gold may be added to the whole product.

This whole vast mineral belt, which in its entirety contains almost every known mineral, is now open to the world. It never has been thoroughly prospected. The land practically belongs to the General Government, and perfect title can readily be obtained, as there is not a land grant in Lincoln County.

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The building of the El Paso Northeastern Railroad into the heart of this region has stimulated all manner of enterprises more than any event in its history, and many fortunes will be made here in the next few years by those who have the courage to venture and the capital to invest.

In addition to the precious metals, there are in the vicinity of White Oaks, which is the natural business center of the county, ledges of black, gray, and white marble over a mile long. Here, as well as at the Salado and in the Jicarilla Mountains, are immense bodies of iron ore running from 50 to 70 per cent. Nature, to more especially endow this portion of the great domain, has underlaid 200 square miles of it with a vein of bituminous coal, the quality of which can not be excelled west of the Mississippi River. Openings have been made in these coal measures at White Oaks, at Salado, and at other points, sufficient to prove their quality and continuity. Inside of two months this county will be supplying El Paso and the Southwest with fuel of a very superior kind at greatly reduced rates. So cheaply can this coal be mined that at White Oaks the very best quality is being delivered to consumers at $2.75 per ton.

In the county there have been forty-three school districts already organized, and there are 1,438 children of school age.

At White Oaks is a school building which was erected at a cost of $10,000, with four rooms furnished. Nogal, Lincoln, and Picacho each have public school buildings suitable for two departments. The other districts are all supplied with school buildings of fair capacity. For the past few years much interest has been taken in educational matters throughout the county, and the per cent of illiteracy is growing rapidly less each year.

Being in direct communication with the outside world, this long isolated region will now receive a great influx of money and capital to aid in developing its unlimited resources and to uncover new mines of wealth.

As to the climate, the General Government settled that when it established a marine hospital at the Old Fort Stanton Military Reservation, near the geographical center of the county, where it proposes to test the agency of mild and pure air, tempered with the greatest amount of ozone, in the treatment of tuberculosis.

SALADO COAL FIELDS, IN LINCOLN COUNTY.

The present terminus of the El Paso and Northeastern Railroad will be Gray, a village in the center of the Salado coal fields, Lincoln County, N. Mex. Here are thousands of acres of coal, connected by a railroad to a region where coal is at a premium—the region surrounding El Paso.

As soon as the railroad became a certainty men were put to work at once in the Salado mines, and many tons of coal are now waiting the welcome whistle of the locomotive to be carried to El Paso, where the market is sure and steady.

The coal is excellent for steaming purposes, and is destined in time to be used most exclusively by the different factories and smelters in Pass City, and also in the northern and interior of the Republic of Mexico.

The railroad having now reached the coal fields, it is expected that within six months from this date more than a thousand miners will be working in the Salado district.

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MORA COUNTY.

The county of Mora is bounded on the east by Union County, on the north by Colfax, on the south by San Miguel, and on the west by Rio Arriba and Taos counties. This county has an area of over 2,000 square miles, consisting of well-watered and as fertile and productive agricultural and horticultural, as well-grassed pastoral, as rich mineral, and as densely wooded timber lands as can be found in any other locality in the great Southwest.

A choice of remunerative occupation is offered to either the farmer, gardener, or stockman; or, should the home seeker prefer to prospect for mineral, or be a lumberman, he can find among the mountain ranges of the western portion of the county, on Government land, free and open to all comers, sufficient inducement for that necessary labor which accumulates wealth in bringing to light the hidden treasures of the hills or in felling the giants of the forest.

The eastern portion of this county, all public domain, is entirely devoted to stock raising. The great plains lying between Union County and Red River support numerous herds of sheep, aggregating hundreds of thousands during all the year. This immense stock range is well watered, and, with sufficient shelter afforded by the many brakes and canyons, comes near to being the stockman's ideal of what a summer and winter range should be. The grass is black gramma, well known to be the most nutritious of grasses.

From Red River westward the country is broken by cedar-clad hills and open parks and glades; is dotted with picturesque stock ranches and small farms until the lower valley of the Mora is reached at Cherry Valley, from which point to the head waters of the Mora River large tracts of land are farmed, and all under irrigation systems, yielding heavy crops of alfalfa, the principal forage plant grown. Other crops successfully raised are meadow hay, oats, wheat, corn, and, in fact, all small grains give a greater return per acre in bushels, and many more pounds to the bushel, than any of the famous wheat or corn States.

From Watrous to the western boundary line of Mora County, on all the streams and throughout all the many beautiful valleys, very large amounts of grain and hay are annually harvested. Las Vegas is yet, and has been for decades, the principal market and distributing point for all crops raised in the upper Mora and tributary valleys, as well as the receiving and distributing point for all material timbers used by the Atchison, Topeka and Santa Fe Railway and sent for hundreds of miles north and south over its line.

The town of Mora is the county seat, and is situated in the midst of extensive valleys, thickly populated with prosperous and industrious inhabitants, the visible evidence of whose labor contributes in a marked degree to the prosperity of the community at large, and with the remarkable result that not less than 40,000 wagonloads of products from farm and forest, and of merchandise, agricultural implements, etc., are exported and imported annually.

As yet railroad communication between Mora and the outside world is lacking, but recently there has been incorporated the Las Vegas, Mora and Taos Railway Company, with principal office at Las Vegas, which intends to link those towns named in its title and bring them into close connection by means of a standard-gauge electric railway, thus giving to Mora all the advantages of being practically on a trans-

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continental line, through Las Vegas, on the Atchison, Topeka and Santa Fe Railway, as a gateway. The early construction of this line is almost an assured fact.

The opportunities for investment in Mora County are unsurpassed in the Rocky Mountain regions. To either the large or small capitalist, the millionaire, or the "man with the hoe" there are presented openings for the safe employment of money which will, in manifold manner, repay all judicious outlays.

With the construction of the proposed railway will immediately follow the installation of immense beet-sugar refineries, canning establishments, flour and oatmeal mills, planing and saw mills, and various other important industries, raw material for which will come from the surrounding country. One item alone, i. e., pease, will furnish to a cannery over 1,000,000 pounds per annum, equal to as many cans as pounds, and of as fine a quality and delicious a flavor as any imported French pease. The Mora pea can be bought for 1 cent per pound, and it requires but little arithmetical effort to figure between the cost and profit on an article at 1 cent per pound for raw material and 25 to 30 cents per can for the merchantable product. Beans in great quantities are also grown in all the valleys of western Mora County, and they will assuredly prove an additional industry to that of canning pease, especially as the New Mexico market is now clamoring for both of them. A very heavy export business can be transacted, and both canned pease and beans will readily sell in all Eastern cities.

The La Cueva Ranch Company has successfully proven the entire suitability of the Mora Valley soil for sugar beets, and a year or two ago planted a small tract, which produced the astonishing yield of 22 tons per acre, which, on analysis made by the chief chemist at the Territorial agricultural station at Mesilla Park, N. Mex., and by the chief chemist of the Agricultural Department at Washington, D. C., showed 19.7 per cent and 19.4 per cent of saccharine matter per ton of beets. The La Cueva Ranch Company has a standing offer to supply the crop off not less than 3,000 acres of beets for a first-class refinery located anywhere in the immediate vicinity of the ranch, which would be two-thirds of the tonnage required by a 100,000-ton plant. The tonnage lacking for such establishment can be easily furnished in close proximity, and an excellent opportunity is hereby opened to large capital to come and invest.

The amount of oats annually raised in the Mora Valley alone often exceeds 10,000,000 pounds, while 2,000,000 pounds of wheat is regarded as only a moderate yield. The following is about as the crops are annually—sometimes more, sometimes a little less:

Wheat	pounds	2,500,000
Oats	do	8,000,000
Corn	do	500,000
Hay	do	2,000,000
Alfalfa	do	1,000,000
Sheep	head	100,000
Wool	pounds	500,000
Pease and beans	do	2,000,000
Lumber	square feet	2,000,000
Piles	linear feet	200,000
Railroad ties		200,000
Cattle	head	2,000
Imports of merchandise, agricultural implements, etc	pounds	4,100,000

But in this connection it is only just and right to state that the area

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of land actually under the plow is but a mere patch compared to the whole area of the county, which statement is necessary to explain what would otherwise appear an extreme paucity of agricultural products. There are at least 500,000 acres of rich lands lying idle and uncultivated, all of which can be put under irrigation systems in the valleys of the Mora, Rio de la Casa, Sapello, Manuelites, Cebolla, Coyote, Rito, Agua Negra rivers, and several minor streams, all of which rivers and streams carry strong heads of never-failing water.

Fruits of all the hardier varieties grow both wild and in orchards in extravagant profusion; they also offer special inducements for the establishment of preserving or canning works.

In minerals the various sorts in constant demand for smelting purposes are abundant. Some of the finest specimens of copper ore ever brought forth from the treasure vaults of the Rocky Mountains are to be obtained in western Mora County. There is also gold-bearing ore, iron, galena, and other sorts awaiting exploitation and intelligent work of the prospector and miner to show their extent.

Coal of a semianthracite character has recently been discovered in apparently inexhaustible measures, which are of sufficient thickness and of such excellence as to establish their commercial value beyond all peradventure. When railroad transportation has been provided, Mora County coal will become known all over the West as a strong competitor in "black diamonds" with any other portion of the country.

The population of Mora County is not less than 17,000 souls. Its assessed valuation is about $1,200,000, being probably only one-third of the actual value.

The altitude runs from 6,000 feet above sea level to 10,000 feet, or perhaps a little higher on the mountain peaks.

The climate is similar to the rest of the northern part or plateau land of New Mexico, and surpasses that of any other country on the face of the globe for counteracting and curing all sorts of pulmonary complaints.

The scenery in the mountains is acknowledged to be superior to the Swiss Alps by those people who have seen both.

The hunter's paradise and the fisherman's ideal for trout fishing is here to be found; the many mountain streams abound in speckled beauties, while game, both feathered and furred, small and large, roams the hills on all sides.

The home seeker can purchase lands already under cultivation for $20 per acre and upward. Farming pays when such lands will readily and constantly yield 50 bushels, or 3,000 pounds, of wheat per acre, which is now selling on the ground at 1½ cents per pound, and never less than 1 cent, with a surety of no failures in crop on account of irrigation.

Many other farm products are raised in this county, and of late years potatoes have been most successfully grown; so much so as to enter into active competition with both California and with Greeley, Colo., bulbs in the home markets.

Vegetables of almost every known variety are grown throughout all the valleys and on all the farms in Mora County. Cabbages of 40 to 50 pounds in weight, as solid and sound as can be imagined, are common results of the gardener's toil. The soil seems peculiarly well adapted to onions, carrots, parsnips, turnips, radishes, and lettuces, and garden truck of all sorts attains speedy maturity, taking the place of and driving out of local markets all importations of vegetables from better-known parts of the West, on account of the superior flavor of

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the home-raised article. Celery flourishes in this county; large quantities can be raised for export in addition to meeting local demand.

In natural but as yet undeveloped resources Mora County can produce a great and varied abundance. Excellent clay for brickmaking; red and white sandstone; limestone; products of the forest, white pine, red and white spruce, cedar of sufficient growth for electric, telegraph, and telephone poles, and many other trees of commercial value all grow in great quantity and of remarkable thriftiness.

There is enough timber in western Mora County to build a railroad round the earth; enough white spruce to supply a very extensive paper mill, or several of them, with raw material for years to come. There is coal in endless amount for fuel for manufactories, canneries, beet-sugar refineries, etc., and raw product sufficient to supply their demands and keep them steadily in operation from the very moment they are ready to commence.

Excellent natural wagon roads, kept in good repair, cover the county with a regular network. All means of travel and transportation are now maintained by vehicles only, except where the Atchison, Topeka and Santa Fe Railway cuts across the country from Wagon Mound to Watrous, some 40 miles of line.

There is no county in New Mexico which presents so diversified a field for the safe employment of capital in large or small sums as Mora does. Good management, abundantly aided by fertile soil, permanent water for irrigation, and intelligent farming, will produce almost incredible results. The land requires no artificial fertilizer, as the water used in irrigating attends to renewing the soil every year, or just as often as irrigation is given the lands and the crops.

To first realize and afterwards appreciate what Mora County can show and offer to the world, personal inspection and investigation are absolutely necessary, as its most fruitful portions and choicest locations lie remote from the present railway and are not seen or even heard of outside their immediate environs.

M'KINLEY COUNTY.

The legislature of 1898–99 for the Territory of New Mexico by an act created the county of McKinley out of a part of the county of Bernalillo, which new county of McKinley will embrace all that portion of the county of Bernalillo lying within the following boundaries:

On the north the south boundary line of the county of San Juan; on the east commencing at a point where the south boundary line of the county of San Juan intersects the range line between ranges 8 and 9 west of the New Mexico principal meridian; thence south between ranges 8 and 9 west of the southeast corner of township 14 north, range 9 west; thence along the west boundary line between townships 13 and 14 north, ranges 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, and 21 west, to the intersection of said line with the west boundary line of the Territory of New Mexico; thence north along the said boundary line between the Territories of New Mexico and Arizona to the point of beginning.

Although this new county has been created as above set forth, it will not be fully organized until January, 1901. Gallup will be the county seat. McKinley County is located in a rich coal-producing section of country. In fact, nearly the entire county is underlaid with coal and will undoubtedly in time be one of the richest counties and the most prosperous in the Territory, as it has numerous resources advantages enough to make it so.

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In the town of Gallup, the county seat, there are located the Crescent Mining Company, the Caledonia Mining Company, and a number of other large mining companies, employing hundreds of men. The coal mined is shipped to California, Arizona, and Old Mexico. There are also the Mulholland and Casna Mining Company, and United States Senator Clark owns and operates successfully a large mine about 5 miles west of Gallup. There are a number of other parties operating mines, the details of which will be found by reference to United States Coal Mine Inspector J. W. Fleming's report contained herein.

In addition to the immense and inexhaustible coal beds, there has also been discovered coal oil and deposits of asphalt in this county, which, however, have not as yet been developed to any great extent. This county is traversed by about 80 miles of railroad.

OTERO COUNTY.

Otero County, which was created in February of this year by an act of the thirty-third legislative assembly, has experienced a more remarkable growth than any region in the Territory since the locality came under the domination of the United States Government. The erection of this young empire is directly due to the efforts of C. B. and J. A. Eddy, railroad promoters, who induced Pennsylvania and New York capitalists to push a railway across 100 miles of barren and dust-choked plain to the Sacramento Mountains and tap a region previously devoid of market and destitute of shipping facilities, but prolific of all manner of farm products, fruit, timber, and minerals. The expenditure essential in reclaiming the locality from its primeval solitude aggregated over a million dollars, but the investment is already proving remunerative beyond the anticipations of the capitalists who furnished the money for the work.

The county is 6,912 square miles in dimension and contains 192 townships, or 4,423,680 acres. It is divided into the following classes of land: Land irrigable by artesian or pumped water, 1,228,800 acres; stock range, 2,584,320 acres; White Sands Desert, 138,240 acres. The Mescalero Apache Indian Reservation occupies 465,720 acres, or 738 square miles.

AGRICULTURE.

The high plateau of the Sacramento Mountains covers an area from 60 to 70 miles in length and 15 miles in width, and is a wonderfully productive agricultural country. Farmers are rapidly settling the locality, and they find a ready market in the county for all manner of farm and ranch products. Every ranchman is evidently in prosperous circumstances, for the railway has brought a market to their very doors, and the distance is so far to other markets that they have practically no competition and can command top prices for everything that they raise. The amount of land now under cultivation aggregates 1,500 acres, situated in the following portions of the county: Mescalero Indian Agency, 1,600 acres; Penasco region, 1,800; Fresnal Canyons, 1,300; Three Rivers, 800; Tularosa Canyon, 800; Sacramento River Valley, 600; Tularosa and vicinity, 400; Agua Chiquito, 400; Weed, 400; La Luz Canyon, 350; La Luz and vicinity, 200; Elk Spring Canyon, 200; Silver Spring Canyon, 150. It is estimated that there is fully 100,000 acres of fine farming land in the county that can be utilized for ranch purposes without irrigation. In the mountain

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region no irrigation is required except for cabbage plants and tender vegetables, which demand water before the spring rains commence. Wells are now being bored for artesian water, and when it is secured over a million acres of land in addition to that already available will be reclaimed for agriculture.

FRUIT GROWING.

The valleys and plains in the foothills and adjacent to the Sacramento Mountains furnish one of the best fruit-growing countries in the United States. There are now 23,500 fruit trees and 24,000 grape vines producing fruit in the county. The fruit trees are located in the following various places: Three Rivers, 5,000 trees; La Luz and vicinity, 8,500; Tularosa, 4,000; mountain country, 6,000. The Tularosa country has 15,000 grapevines; La Luz, 6,000, and Three Rivers, 3,000. Previous to this year there was no way of getting the fruit to market, and each season's crop was a total loss except for the small amounts required for home consumption. From time to time a few of the orchardists tried to dispose of their crops by hauling them over the rough mountain roads to Roswell, Eddy, White Oaks, Nogal, and El Paso, distances varying from 80 to 120 miles, but the cost of transportation and the time required in disposing of the fruit made the experiment unprofitable. With the railway facilities now available it will be possible to dispose of each season's crop without any difficulty, for the market embraces the whole Southwest, and the climate is such that a vast amount of fruit is required. Very few of these now engaged in fruit raising understand horticulture, but the methods employed in California and other great fruit-raising sections will come into general use here when the profits to be made in the business are realized. So far the trees here have been free from scale and destroying insects, and the total demolition of a crop by frost is unknown. There is less loss and risk attached to the fruit business in Otero County than anywhere else in the West. The fruit raised is remarkably large and luscious, and the flavor unexcelled. As an evidence of the remarkable worth of the region as a fruit-growing section, it may be well to call attention to the condition of one orchard at Three Rivers. In P. Coughlan's orchard this year the peach trees are so heavily laden with fruit that the branches of the trees are touching the ground, and in many instances have been broken. The peaches are from 3 to 6 inches in diameter, and it is estimated that this small orchard of less than 3,000 trees contains 200,000 pounds of peaches. They sell for 5 cents per pound on the El Paso market, and the crop, if marketed, would represent to him $10,000. Some of these peaches weigh as much as 19 ounces, and an exhibit at the World's Fair gained for them the premium. Apples from this orchard have been found to weigh 29 ounces. One tree contained 6,000 pounds of fruit. Marked success has attended the efforts of fruit growers in the higher mountain country, and apples do especially well there.

CATTLE GRAZING.

Otero County, with its abundance of water and 4,038 square miles of range, furnishes an ideal spot for the stock grower. There are now owned by residents of the county 39,500 head of cattle, and it is estimated that fully 50,000 head, owned by large companies having home ranches in adjoining counties, feed here. The large cow outfits that formerly occupied the range exclusively have for the most

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SAWMILL AT ALAMOGORDO, OTERO COUNTY, N. M.

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part disappeared, and the stock are now owned by numerous small stockmen, who are in a generally prosperous condition. With the price of stock advancing, the cattle industry of Otero County represents a neat figure in wealth.

SHEEP AND ANGORA GOATS.

The high table-lands and prominent foothills of the Sacramento Mountains furnish excellent pasturage for sheep and goats, and the business is being adopted by a number of newcomers in the county. There are 39,860 sheep in the county, and 12,000 Angora goats. The sheep men figure large profits from the business, and there is promise that it may become an important factor in the industries of the county. The county is such topographically that there is no danger of the sheep and cattle men coming in conflict with each other's interest.

TIMBER RESOURCES.

The timber belt of Otero County is estimated to be 20 by 80 miles in extent, containing the heaviest timber in the region from the Mescalero Indian Agency south to the headwaters of the Sacramento River, including the Toboggan, Weed, and Penasco countries. The Alamogordo Lumber Company is doing an extensive timber business in the mountains, and its operations will furnish timber for two large sawmills that are located in the town of Alamogordo. The force of men working in the woods numbers 135 at present, and it is the intention of the lumber company to double it as soon as possible. The shipments amount to 80,000 feet of timber per day, and experts state that the supply can not be exhausted in 50 years, even though the output be doubled. The extensive operations of the company furnish lumber to the El Paso and Southwestern market at a much less figure than Louisiana and Texas concerns can provide it. From Toboggan, the timber-shipping station of the lumber company, narrow-gauge railways have been run for a distance of 7 miles to the summit for facilitating the timber operations. The canyons are narrow, and hills steep, and the cost of working the timber is reduced to the minimum by the construction of slides from the top of the hills to the railway tracks below. The wages paid in the lumber country range from $2 to $3 per day. The timber averages in size from 18 inches to 2 feet in diameter, and occasionally timber is cut that is too large for the band saws of the mills to handle. One of the largest trees felled measured 6 feet 1 inch in diameter, and made ten 16-foot saw logs. Pine, white spruce, red spruce, and oak are the classes of timber most abundant. The red spruce furnishes the largest timber.

The two sawmills at Alamogordo have each capacities of 100,000 feet of lumber per day. A factory in connection with the mills is planned for the manufacture of sash, doors, blinds, moldings, and everything used in house building. The mills are equipped with the very best machinery, and every particle of the timber is utilized in the work. The slabs are worked into pickets, boxing, lath, wainscoting, etc., and the bark and sawdust are used for fuel in generating power for the mills. The construction and mechanical arrangements of the mills make it possible for them to manufacture lumber as cheaply as can be done elsewhere.

The company is now selling lumber as cheap as it can be produced in New York, Pennsylvania, and other places in the East, and cheaper than in Illinois, Iowa, and Nebraska. The quality of the lumber

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averages sounder, stronger, and better in every respect than Eastern lumber. The company has an investment of over $500,000 in the lumber business in Otero County.

COAL FIELDS.

The matter which first attracted the attention of the Eastern investors to Otero County and induced them to furnish an outlet by rail for its resources was the coal measures of the Salado basin, located 160 miles from El Paso. After a thorough examination of the Salado, White Oaks, and Tularosa plateau coal fields, it was decided that the best coal available was to be found at Salado. There is a great quantity of coal in the White Oaks and Tularosa sections, but the veins are thin and badly disturbed by volcanic action. In the Salado an exceptionally fine quality of coal is found and the veins are thick and the coal intact. Three seams have been opened, two of which are bituminous and coking, 55 and 62 inches thick, respectively, and a third vein of anthracite coal, 40 inches thick. The Salado basin is from 10 to 15 miles wide and the coal measures underlying it are pronounced by experts to be much more regular than the coal fields of Pennsylvania. It is estimated that there is a sufficient quantity of coal there to supply the Southwest market for at least fifty years. Heretofore, coal and coke have been brought to El Paso from distances ranging from 320 to 550 miles, but the building of the El Paso and Northeastern Railway through Otero County places the Salado field within 160 miles of the distributing point, and the haul is practically down grade all the way. The opening of the coal fields means much more than the mere furnishing of cheap fuel to El Paso, for it will also aid materially in developing the precious metals found in Otero County by furnishing mining operators with fuel at a reasonable rate.

PRECIOUS METALS.

The Jarilla mining district is now the most important mineral field in Otero County. Since the railway reached the locality development work has been carried on extensively and now heavy shipments are made from the Nannie Baird, Lucky, and other properties of lesser importance. The gold, copper, silver, and lead ore shipments from that county are of such magnitude that an Eastern company has seen fit to erect a smelter near the El Paso and Northeastern Railway tracks in El Paso, and they confidently figure on drawing their mineral supply principally from Otero County. Recently a rich placer field, 2 miles square in extent, was opened in the Jarilla Mountains, but the workings so far amount to but little on account of the scarcity of water. A number of the miners who are prospectors in the region, have ordered dry washers, and will attempt to work the field as soon as they arrive. Prospecting and development is continuing steadily in the White Mountain, Three Rivers, and Tularosa districts, and many astonishing finds have been made, but the development is not such at this time that the geological conditions of the regions can be dilated on. The railway company reports a constant increase in the ore-shipping business from the county, and positively expects the road to be one of the heaviest mineral-shipping roads in the Southwest as soon as the properties are more thoroughly developed. The railway company is assisting the development of the Jarilla district by offering a rate of $1 per ton on ores running $10 or less and then a graduate freight scale according to value of the ores.

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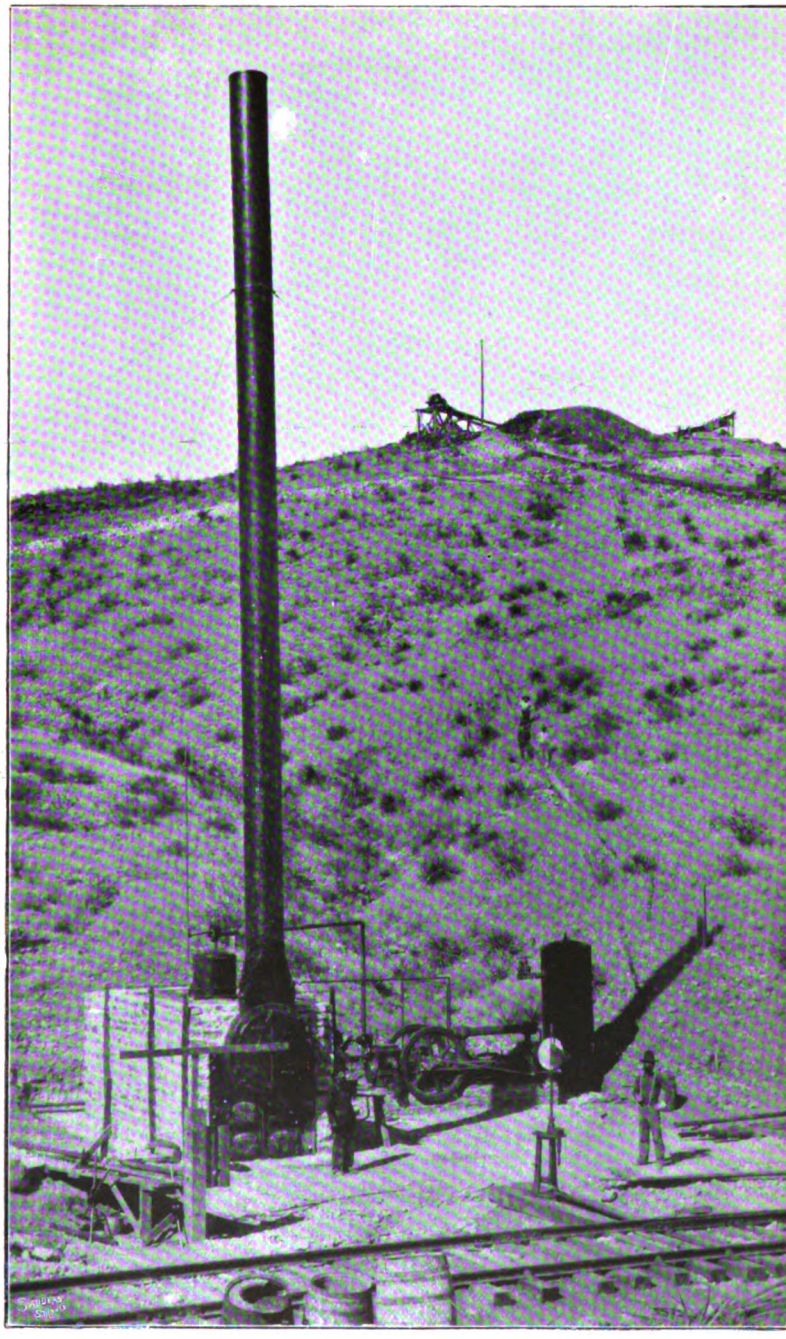

MINING AT JARILLA, OTERO COUNTY, N. M.

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THE WHITE SANDS.

The White Sands Desert, which occupies the extreme western portion of Otero County, is in reality an immense gypsum bed, which will some day form an important item in the wealth of the county. The sand hills resemble huge banks of snow, and on the west of them is found an old lake bed covering 100 square miles area, the bottom of which is composed of layers of crystallized gypsum, some of the crystals being 8 to 10 inches in length. The lake bed deposit for the most part is fibrous and sectile, like mica. The west winds have evidently blown the crystals about for many years, the friction pulverizing them and forming the huge hills on the east. In some places in the lake bed mounds of gypsum, composed of successive layers, are found 15 feet in height, which demonstrates that a bed of gypsum at least 15 feet in depth has been removed by the winds. The sand hills proper vary in size from small mounds to hills 20 feet high, and miniature mountains in ranges and isolated peaks, set off with valleys and canyons, are features of the scene, which is picturesque indeed. There is neither plant nor animal life in the center of the sands, but along the outskirts vegetation flourishes. The constant shifting of the sands kills and prevents plant life from taking root in the desert proper. Along the borders cottonwood trees are found which measure 8 inches in diameter. The soil is very moist, and it is found especially good for the growth of peppermint, large tracts of which are found growing there wild. An analysis of the sands, made at the agricultural college in Las Cruces, gave the following results:

	Per cent.
Gypsum	0.97
Calcium carbonate (lime)	2.68
Magnesium carbonate	.06
Magnesium sulphate	.12
Potassium sulphate	.07
Sodium carbonate	Trace.
Sodium chloride	Trace.

Experiments made with the sands for fertilizing purposes found it to be especially adapted to that use. The plant-growing qualities of the sands is exceptionally good. The experiments at the agricultural college demonstrated that the application of white sand in considerable quantities improved any soil a great deal. In addition to the uses mentioned above, the sands are valuable for the manufacture of plaster of paris and its various by-products. Sulphuric acid, which is largely used in leaching copper ores, can be manufactured from the sands, and with the advantages of cheap power, in consequence of cheap fuel, the great desert 20 miles west of the town of Alamogordo will some day be utilized in commerce and be found a source of great wealth.

RAILWAY ENTERPRISES.

The railway enterprises begun during the past year in Otero County include the El Paso and Northeastern, which is now 160 miles in length and still in progress of construction; the Alamogordo and Sacramento Mountain Railroad, which is completed from Alamogordo to Toboggan, a distance of 20 miles, and a narrow-gauge timber railway from Toboggan up the various canyons of the Sacramento Mountains—about 9 miles in length. The El Paso and Northeastern Railway was built for the coal business of the Salado Basin alone, but various resources never before thought of have been developed with the building of the

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road, and now it is enjoying a good freight and passenger business. The Alamogordo and Sacramento Mountain Railway shows some of the most intricate work of broad-gauge railway building in the United States. Maximum grades of 5.2 per cent and 30° curves are features of the road. A splendid agricultural and timber country was opened by this road, and the shipping business already demonstrates that the enterprise was justified. In all probability another railroad from Alamogordo to the White Sands, and from thence to the San Andres mining district, will be built as soon as developments in those regions warrant the move.

THE IRON INDUSTRY.

In at least a dozen places along the line of the El Paso and Northeastern Railway, in Otero County, deposits of superior ore, suitable for the manufacture of Bessemer steel, have been found. Cheap coal and coke will place the iron industry of this county on a plane with other localities, and then New Mexico, Texas, and the whole Southwest will be supplied with the home product. The iron ore has been tested at some of the largest steel works in the United States and is shown to be superior to the Colorado product. When the time arrives for the thorough exploitation of the business, New Mexico will find one of her principal industries located in this county.

SCHOOLS OF THE COUNTY.

Since the organization of the county, two different school superintendents have been appointed, but neither would undertake the work of attending to the enumeration of the children or apportionment of school funds, and the matter will not be attended to until the October meeting of the board of county commissioners. Alamogordo has a private school with an average attendance of 75, and the public schools will be established in less than two months. As an evidence of the increase in the number of children of school age in the past year, the Fresnal district (district No. 15) furnishes a startling example. Last year the enumeration of the children in that district showed 29. This year it is 225. The same ratio of increase will be found in every district that is adjacent to the railroad, and in every farming and fruit section and town. Inasmuch as there is no school superintendent to attend to this matter now, it is impossible to give accurate figures relative to the schools.

LABOR SUPPLY.

The labor supply of the county is low. Men for railroad work, timber work in the wood, lumber men for the sawmill, etc., are scarce, and several crews have been imported during the past year from Pennsylvania, Louisiana, Chicago, and other places.

CLIMATIC.

Climatically, the conditions of Otero County are very similar to those existing in other localities of a like altitude in New Mexico. The United States Government has placed the stamp of its approval on the section as desirable for tuberculosis patients by the establishment of a merchant-marine sanitarium at Fort Stanton, on the northern border of the county. The dryness of the atmosphere in the lower country and the lack of precipitation makes it especially desirable for the treatment of that disease.

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SCENE ON THE ALAMOGORDO AND SACRAMENTO MOUNTAIN RAILROAD--"THE CLOUD CLIMBING ROUTE."

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ALAMOGORDO.

Alamogordo, the county seat of Otero County, has experienced the most remarkable growth of any city in the Territory. Less than a year ago the town was established, and it has to-day over 2,000 inhabitants, broad streets, an excellent assortment of splendid brick storehouses, well stocked with merchandise; three churches, two large sawmills, costing over $200,000; an electric-light plant, ice factory, a water-works system which cost $50,000, railway hospital, and commercial men's club. The general offices of the El Paso and Northeastern Railway are located here, and the company will also erect a round-house and machine shops at an early date. The county has the erection of a court-house in view, and fully 20 fine two-story residence houses, costing from $2,000 to $10,000, adorn the place. It is estimated that over half a million dollars has been spent in improvements in the city during the year.

WEALTH AND POPULATION.

It is difficult at this time to arrive at a correct idea of the taxable wealth of the county, for the work of the assessor has not been completed since the organization of the county, but the amount will exceed $950,000. The census rolls show a population of about 3,500, and it is constantly increasing. The El Paso and Northeastern Railway is directly responsible for the increase in population, business, and wealth of the county, for the opening of the region has given employment for almost unlimited capital, and a great amount of labor in the timber and mining regions, and has furnished homes for thousands of farmers, stockmen, and people engaged along commercial trade lines. The live-stock, agricultural, and other industries have been increased wonderfully, and the competency and energy displayed in bringing about these results is worthy of the highest commendation.

TULAROSA.

NEAR THE FOOT OF THE WHITE MOUNTAINS, AN IDEAL PLACE FOR HEALTH-SEEKERS, AND A REGION RICH IN AGRICULTURAL, FRUIT, AND MINERAL RESOURCES FOR THE HOME-SEEKER.

A climate which will effect a cure for pulmonary complaints is the one great desideratum for which persons afflicted in that respect have traveled the whole world over. It is generally conceded that a place having a mild and uniform climate, linked with the pure air of a high mountain altitude, is the place which consumptives should seek, and all of these necessary attributes are to be found in Tularosa, Otero County, N. Mex.

This little town, which is in southern New Mexico, is on latitude about 33° north, is situated at the base of the White Mountains, whose highest peak, about 25 miles distant, rises 12,000 feet high, and the town itself has an altitude of 4,000 feet above the level of the sea. It is supplied with water by the Tularosa Creek, which is a mountain stream whose sources consist of several mountain springs containing iron, magnesia, and sulphur, on the reservation of the Mescalero Indians, flowing for about 20 miles through the canyon dividing the White Mountains and the Sacramento ranges. These mountains are covered with pine, fir, juniper, pinon, and balsam fir, all of which endow the atmosphere with a healing balm beneficial to the lungs. The balsam fir furnishes a resin pleasant to the taste and much used among the mountain dwellers for coughs, sore throats, and similar complaints. The temperature ranges from the freezing point to 94° F. This is the record for eighteen years. The thermometer reaches its highest point about the middle of August, when for about two weeks it reaches 94° at noon and remains there until 3 p. m., when it begins to decline, and at night the breeze sets in from the mountains, which renders a blanket necessary before morning. The large number of old cottonwood trees which line the streets of Tularosa furnish dense shade which makes the warmest days pleasant and agreeable. The real winter weather usually lasts from about the 20th of December until the 10th of January, and then ice can be seen in the irrigating ditches from one-eighth to

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one-quarter of an inch thick, but never strong enough to bear a boy's weight. Tularosa being completely landlocked against the winds on the north and east by mountain ranges and spurs from the main ranges, never experiences those sudden changes of temperature which are so severe on lung troubles.

New Mexico as a fruit region has already been greatly advertised, and the fruit of all kinds raised proves her high standing for fruit culture. Tularosa does not fall behind any other portion of the Territory in the cultivation of apples, peaches, pears, apricots, nectarines, figs, grapes, and wine making from the "Mission" grapes. Apples measuring from 4 to 6 inches in diameter are raised in Tularosa.

The tourist and hunter will find many attractions in the vicinity of Tularosa. The mountain landscape and wonderful "mirage of the desert" to be often seen in Tularosa Valley, are things worth going far to see. Six hours' ride will take the hunter among the wild turkey, black-tailed deer, and cinnamon bear, and a day's drive in a buggy will take the disciple of Walton to where the speckled trout are greedily awaiting the angler's bait.

A large area of the United States public lands is still vacant in the vicinity of Tularosa. That they are rich and fertile is proven fully by the yield of all the lands under cultivation in this section. But irrigation is necessary. Turn water on the land and it will produce anything grown in the temperate zone and many of the products of the Tropics. The mountain streams furnish water in limited quantity only during the dry season, but enough goes to waste and is lost during the winter months to irrigate a country as large as the New England States if it were only stored in reservoirs, where nature has almost provided them—the mountain canyons. Movements are now on foot to effect that object. The mountain ranges near Tularosa contain large deposits of gold, silver, copper, iron, and coal yet undeveloped.

Tularosa is about 100 miles from El Paso, Tex., situated on the El Paso and Northeastern Railroad. The company is constructing a modern two-story depot, with rooms upstairs for the agent. The road is being rapidly pushed on to the Salado coal fields, in Lincoln County. These fields are extensive and a large force of men are now employed on development work. When the road is completed to this point an era of prosperity will follow all along the line, not only in the development of the coal mines, but also the gold, copper, and other minerals, which abound in the region penetrated by this road. There is also an unlimited amount of timber in this region. To those seeking for health, we say come and breathe the dry mountain air of Tularosa, charged with the life-giving ozone, and warmed by a southern sun. To the tourist and pleasure seeker we say, come and hunt the deer, the bear, the wild turkey, and fish in the mountain waters. To the capitalist, we say, come and examine the greatest opportunities for irrigation enterprises which the country affords. As a mineral and mining country, this section is coming to the front, and mining men are coming here almost daily to examine and report on mining propositions. It will only be a short time until the facilities for shipping ores will be good and claims that have not been worked heretofore will be good properties. And to the homeless one who may desire to avail himself of the United States land laws, we say that in the vicinity of Tularosa lies the largest body of unappropriated public land now left out of the almost boundless public domain, subject both to homestead and desert entries. Now is the time for the landless to take advantage of the opportunity offered.

INDIAN RESERVATION TO BE OPENED.

Directly tributary to the El Paso and Northeastern at Three Rivers and Tularosa is the western portion of the Mescalero Indian Reservation which will soon be thrown open for settlement. The bill to that effect has become a law, and the Indians have taken their lands in severalty, so that all that is required now is the final proceedings to its opening.

The western portion of this reservation is well known to be a rich mineral section, the value of which is greatly increased because of its proximity to the railroad. The rich agricultural country to be thrown open will be a revelation to the many hundreds of people who will seek homes there in a short time. With plenty of water and rich, fertile soil, it is destined to become the great farming area of the Southwest.

In regard to the healthfulness of the section, the Government has

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PAVILLION, CLOUDCROFT, OTERO COUNTY.

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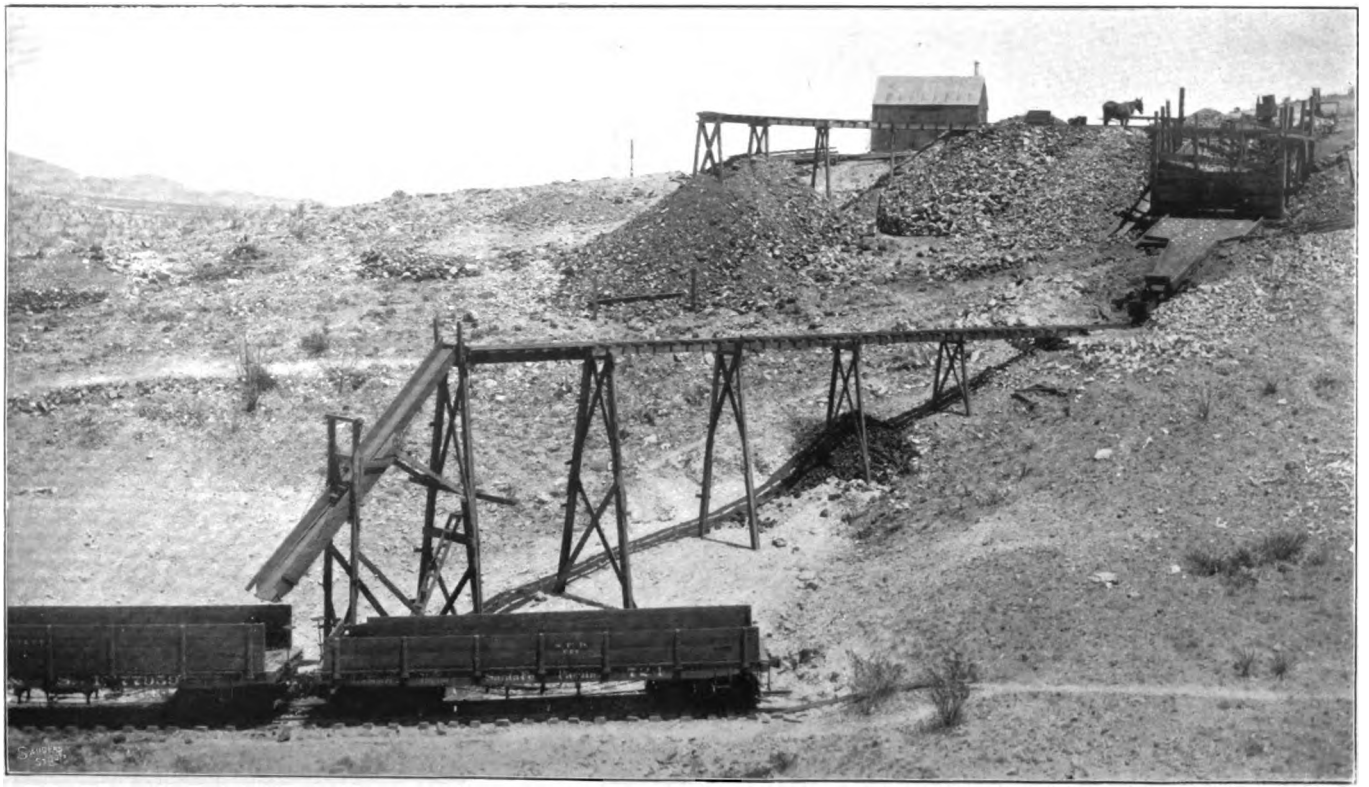

NANNIE BAIRD MINE, JARILLA, OTERO COUNTY.

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set its seal upon the climate by establishing a sanitarium for those of its soldiers engaged in the Navy who are afflicted with pulmonary troubles. This will be the great consumption sanitarium of the world, where, it is thought, will be received all who have become afflicted with the dread disease and who desire to try the benefits of a glorious climate combined with the best medical treatment known

LUMBER DISTRICTS OF THE SACRAMENTO MOUNTAINS IN OTERO COUNTY.

By means of the Alamogordo and Sacramento Mountain Railroad the magnificent forests of pine trees which exist in these mountains are opened up and made easy of access.

The great extent of these forests is such that, even at the present rate with which lumber is being taken from them, many years must elapse before any appreciable diminution in the supply can be detected.

In the heart of this vast forest, upon the summit of the Sacramento Mountains, is situated the noted resort of Cloudcroft, where 2,000 acres of wild woodland, replete with many surprises in the way of scenery and cozy nooks, is set apart as a park, where hundreds of tired people may find rest during the hot summer months in the cool, balmy air of the mountains.

A good dining hall upon the grounds furnishes meals to those who, while camping out, do not care to endure the heat and other vexations connected with cooking.

The Sacramentos can well be called the sportsman's paradise, as they abound in game, such as turkey, grouse, deer, bear, mountain lion, wild-cat, etc.

RIO ARRIBA COUNTY.

Rio Arriba County lies between the counties of Santa Fe, Taos, San Juan, and Bernalillo, and is bounded by the State of Colorado on the north. Its area is about 4,500,000 acres, of which over 2,000,000 are available for farming and pasturing purposes, agriculture and stock raising being the occupation of seven-tenths of the population, which, according to the last official census, is 11,534, although a recent estimate places it at 19,000.

EDUCATION.

The county of Rio Arriba has as many, if not more, public schools than any other county in the Territory of New Mexico, and all are well conducted and largely attended. There are 42 school districts, with an enrollment of over 1,283 pupils and an average attendance of 878 males and 405 females.

The principal towns of this county are Tierra Amarilla, the county seat, with a population of 2,000, a fine court-house, modern-built jail, three good stores, and a branch of the Denver and Rio Grande Railroad. The other principal towns, which are all thriving, are El Rito, Chama, and Monero, the last being a coal-mining town.

Irrigation is practiced wholly, there being no less than 40,000 acres under ditch.

There are two very extensive and exceedingly fertile valleys, the Rio Grande Valley, and the vast strip of land along the Chama River from its source to its junction with the Rio Grande, 3 miles above Espanola. These are the fruit regions of this county, and the water for irrigation of the fruit lands is furnished by the Rio Grande and Chama rivers.

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MINING.

The mining industry is also carried on very extensively in Rio Arriba County. Rich galena ore has been found running $40 in silver and 30 per cent in lead within 8 miles of the Denver and Rio Grande Railroad, which railroad crosses the county of Rio Arriba in its northern part from east to west. Gold has been discovered at Tierra Amarilla in good paying quantities; copper and coal very rich has been found in the neighborhood of Abiquiu covering an area of 16,000 acres. There are now three mining districts, i. e., Good Hope, Eureka Gulch, and the Headstone, within the county, which are considered by mining experts equal in rich ores to the famous Creede district of Colorado.

VALUATIONS.

The value of property is $907,176. There are 1,550 head of cattle, valued at $13,002; 127,869 head of sheep, valued at $103,725.85; 1,082 horses, valued at $14,023, and 67 mules, valued at $1,571.

FRUITS.

Fruit of the very finest flavor is grown in this county; is free from defect and is very abundant.

SAN JUAN COUNTY.

San Juan is the northwest corner county of New Mexico, is about 75 miles square, comprises 3,542,000 acres and lies just south of the reservation, bordering its entire length. Aztec is the permanent county seat of San Juan County, and is situated in the center of the great Animas valley, flanked on either side by the fertile valleys of the San Juan and La Plata rivers. It is in the very heart of the greatest fruit belt and richest producing agricultural district in the whole Southwest. It is the central and general distributing point for the mail routes of San Juan County, and the emporium of trade and business for northwestern New Mexico. Its business and professional lines comprise three large general stores, two hotels, one hardware store, two millinery stores, one newspaper, two blacksmith shops, one livery stable, two saloons, one harness shop, one meat market, two attorneys, two physicians.

Aztec has a fine two-story brick school building and a large, commodious church building (Presbyterian). A substantial wagon bridge across the Animas River near town has recently been completed. A roller flour mill of 50 barrels' capacity daily, equipped with modern machinery and operated by a splendid water power obtained from an irrigating canal, is the latest addition to the enterprises of the town. The Territorial government has established an agricultural experimental station at Aztec and has spent about $7.000 on buildings and grounds, and the last legislature made provision for its future maintenance.

WATER SUPPLY.

San Juan County is traversed by three large rivers, which head in the snow-capped mountains of southwestern Colorado, and furnish a never-failing water supply for irrigation, under which system all successful farming is conducted. These rivers are: The San Juan, about 270 feet wide, with an average fall of 11 feet to the mile, and with a mean flow of 3,200 cubic feet per second of time; the Animas, 150 feet wide, with an average fall of 21 feet to the mile, and a mean flow of 2,000 cubic feet; and the La Plata, about 30 feet wide, with an average fall of 40 feet to the mile, and a mean flow of 250 cubic feet.

RESOURCES.

Nature has indeed done much for San Juan County. With a fine and healthful climate, it has thousands and thousands of acres of rich, level, fertile lands, and an everlasting water supply for all purposes. Large and inexhaustible fields of coal, with veins from 4 to 16 feet thick, crop out at the surface.

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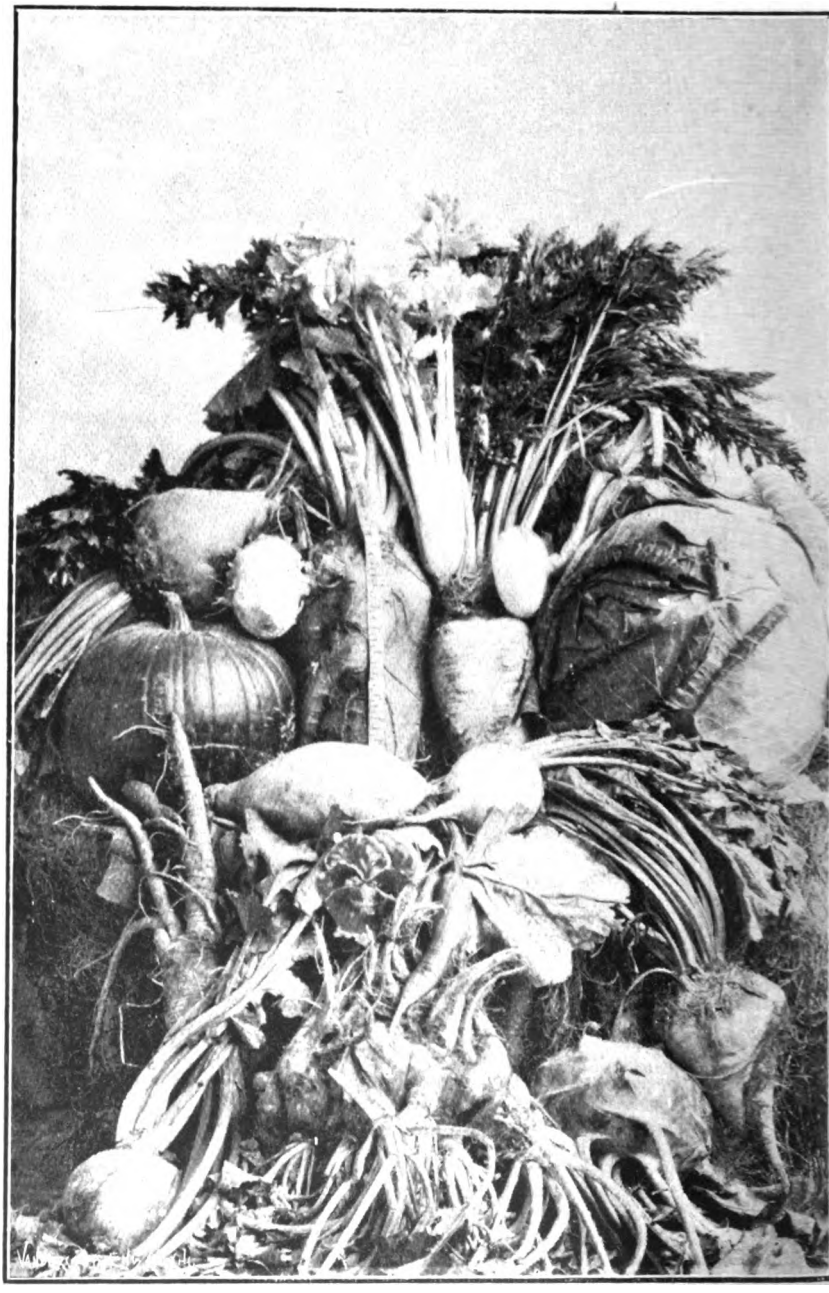

SAN JUAN VEGETABLE BOUQUET.

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What makes San Juan County the finest county in New Mexico and the future great country of the Southwest is—

First. One of the finest climates on earth.

Second. Lands as rich and of as wide an extent as any country can boast,

Third. Its everlasting water supply and the ease with which it can be applied to the lands.

Fourth. The capacity of the soil to raise any kinds of crops in enormous quantities and of the finest qualities.

Fifth. The finest fruit-producing country east of California.

Sixth. The fine stock-grazing land of the higher lands and mesas and the close proximity of mountain ranges for stock in summer and the enormous crops of alfalfa hay that can be produced so cheaply for winter feed.

Seventh. The profitable production of live stock, cattle, horses, sheep, hogs, chickens, bees, etc.

COST OF HOMES.

It is estimated that not one-twentieth of the available tillable lands are yet under irrigation and cultivation. Of the lands already under irrigating ditches and subject to immediate irrigation not one-fifth is in use or cultivation. Thousands of acres of rich, fertile land, with perpetual water right, ready for use and cultivation, lying idle and unused, can be bought as raw lands with water rights at from $10 to $15 and $20 per acre, while improved lands with houses and fencing and productive orchards can be bought at from $20 to $25 and $30 per acre, owing to location and improvements. Thousands of acres of rich, level lands lying on the upper valleys and mesas, yet vacant and subject to entry under the public-land laws, can be irrigated with larger canals and ditches to carry the water.

PRODUCTS.

Entering the Animas Valley, in San Juan County, after leaving the Ute Reservation, the visitor sees well-irrigated ranches, with bearing orchards and alfalfa and grain fields of unsurpassed productiveness. Alfalfa yields three and in some cases even four crops per year, and, in addition, furnishes pasturage throughout the winter. Wheat, oats, barley, rye, potatoes, and sugar beets yield as well as in the other most favored regions. Small fruits of all kinds do well, the grape is much more prolific than in the famous California vineyards, while orchard fruits are of superlative quality. The large, sweet cherries commonly sold throughout the country as California cherries thrive here. The pear here finds its most congenial home. The apricot, almond, nectarine, and peach grow to perfection, and the apple, king of fruits, is beyond compare. Almost every farm on down from the reservation line throughout the county has its orchard. The older orchards produced 15,000,000 pounds of apples in 1898, and the quality of the fruit has established for it a recognized place in the great markets of the country. Pear blight, grape rot, apple scab, and the many other enemies and afflictions of fruit culture in the States of the Union are as yet unknown in this favored section.

The pasturage and water supply of the high mesas in the mountains north are ample for the summer range of vast herds and flocks, which in winter are fed on the valley farms. The sheep and cattle interests are already very extensive and are destined to form the basis of the agricultural wealth of the county.

THE OTHER TOWNS.

This article would be incomplete were not some mention, however brief, made of the many other towns and settlements of the county, possessing, as they do, innumerable attractions and a future pregnant with untold possibilities. Chief among these is Farmington. The fame of Farmington as a great fruit-producing center is widespread. The town is situated at the junction of the three rivers, the San Juan, La Plata, and Animas. It has several hundred inhabitants and is constantly and rapidly growing. The oldest orchards in the county are located near here. The soil is rich, the improvements many and substantial, and the people progressive to a degree.

Fruitland, Jewett, and Olio are numbered among the growing towns along the lower San Juan River. They are highly thrifty and prosperous and deserve a visit from the intending settler. Cedar Hill, on the Animas near the State line; Flora Vista, also on the Animas, 7 miles below Aztec; Bloomfield and Largo, on the San Juan, and the La Plata settlement along the productive and progressive valley of the La Plata River, complete the list of San Juan's embryo cities.

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A WORD TO THE HOME SEEKER.

When you visit the opening of the reservation you may not get what you want. You will find some of the choice land already allotted. You may find other active, energetic people just ahead of you and the most favorable locations gobbled up by the most fortunate land seekers in the scramble for choice locations, but do not get discouraged. You have come to the Southwest to fully investigate. You want to change locations; you may have weak lungs or throat trouble or be suffering from catarrh or rheumatism; you are perhaps from the slow, go-easy, overcrowded East, and you are wanting a vacation among the strange and diversified scenes of the great West; you want a home of your own with rich soil and plenty of water, and one that will produce anything that grows; and you want a change of climate from the hot, sultry summers of the Eastern and Middle States and from the cold, long winters with their many grievances. Do not get discouraged because you may not get what you want on the reservation. It may not suit you: there may be too much mountain and too little valley. Come right on down across the reservation into San Juan County, N. Mex. Come to Aztec, 38 miles south of Durango, where the Animas River basin widens out into a beautiful broad valley with thousands of acres of the most fertile lands. Remember that it is only 10 miles from Aztec across to the great valley of the San Juan River and only 12 miles across west to the beautiful valley of the La Plata. Remember that while we are only 38 miles south of Durango, we are entirely out of the mountains, among the foothills, and in the broad valleys, and more than 1,000 feet lower in altitude.

There is nothing on the reservation that beats our country. We have better land and more of it. We have more water and it is easier handled to irrigate with. We have all the building stone and all the coal and fuel we need. We have a much lower altitude and a better climate. We have big orchards that have been tried and are found fruitful. We have good schools and churches, good society and good people. We have plenty of cheap lands that can be bought on long time at a low rate of interest, and we have just started a great big empire that has more rich natural resources than any other tract of land of its size in the United States. We want more good, industrious people to help us develop its many rich resources and make homes that mean both independence and fortune in the future in the growth and prosperity of this favored country. Do not get discouraged if others are ahead of you in the reservation. Just beyond is the promised land. Just over the border is the famous San Juan. Just down the river is the great Animas Valley that offers the finest homes in the finest climate for the least money, with the best surroundings of any locality in all the great Rocky Mountain region.

SAN MIGUEL COUNTY.

San Miguel County is larger than the State of Massachusetts and has a population half as large as the State of Wyoming. The topography of the county is made up of mountains in the west part, fertile valleys, and broad plateaus, called mesas, in the central and east. It has every diversity of climate, soil, and scenery, and the great diversity of the staple industries is an ample guaranty of the permanent prosperity of all. Here we have mountain, plain, and valley, the basic conditions best adapted to varied and profitable human energy; mines, cattle, and agriculture, three of the great basic industries of the world all combined, constituting an aggregation of producing industries that underlie and are essential to the successful prosecution of all others.

The Rocky Mountain range, which lies across the west end of the county from north to south, is ribbed with gold, silver, iron, copper, lead, and coal, and yet lacking everywhere of being at all generally exploited.

The great plains which lie between the mountain slopes and the valleys of the streams that cut the county in every section are covered with nutritious grasses and are well supplied with water, and are thus made capable of sustaining vast herds of cattle, sheep, and horses. Many of the valleys are limited, it is true, but practically each of them is of sufficient area to accommodate a neighborhood of farms and capable, with intelligent storage, of supplying all with water for all purposes.

The greatest of all needs of San Miguel County is farmers. Of merchants, lawyers, doctors, politicians, middlemen, statesmen, etc., the supply is fully equal to the present demand; but the farmer, the basis of development and the foundation stone and superstructure of all public prosperity, individual, local, State, and national—the man who tills the soil in rational, intelligent, and successful ways—is the man needed here.

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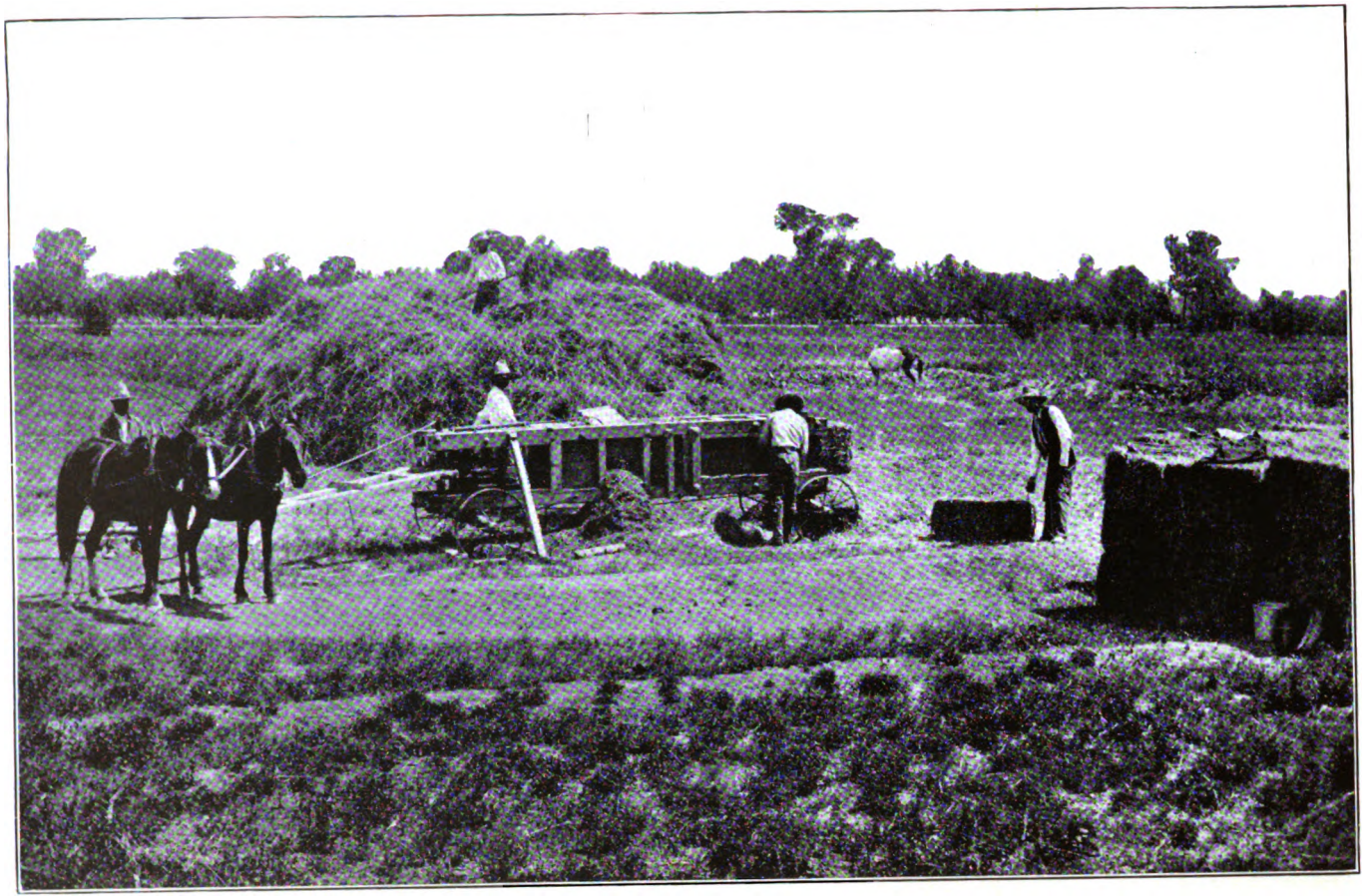

BALING ALFALFA IN SAN JUAN COUNTY.

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The native population of this county are natural sheep men and cattle men, and devote all their attention to these profitable industries. In many instances they have their homes located in rich valleys capable of producing large and paying crops, but at the same time import their corn and flour from the Middle States. In San Miguel County there are valleys with ample water, if intelligently used, to supply with wheat, oats, corn, and hay a population of 200,000 people, yet for a lack of farmers there are on an average of twelve carloads of flour, three of corn, and five of oats shipped into this county per month the year around. This is a natural result of the conditions of our industries. The cattle and sheep men are not producers of hay, grain, and fruits, nor do they even raise garden truck, but they buy oats by the ton, and they buy bacon, garden products, and fruit. The miners who delve for coal, copper, silver, and gold are many, and they buy imported products at good prices.

Our prices for grain, etc., are Kansas prices with freight added. For instance, if oats can be laid down here from Kansas or Nebraska, or anywhere east, at $1 per 100 pounds, $1 per 100 pounds is the price of our oats. So our farmers get the Eastern price with a very high freight rate added, and thus our grain, our garden and dairy products are better paying than they are in the Eastern States, and our market is at home. I am unable to obtain statistics of the amount of poultry and dairy products imported into New Mexico each month or year, but the amount is enormous, and I think it is perfectly safe to say that nine-tenths of the poultry, eggs, and butter used in New Mexico comes into the Territory by express, and this is for the sole reason that we have not in this country the farmers or small ranchmen to supply us with these necessities, a golden opportunity it would seem for thrifty Americans who desire to come West and locate in the finest climate on earth.

San Miguel County is the center of the two great industries in New Mexico, cattle and sheep raising. Of the 20,000,000 pounds of wool produced annually in New Mexico, 4,000,000 pounds are grown and 8,000,000 pounds are marketed in San Miguel County. This county is also the headquarters of a majority of the cattle men of the Territory. In Las Vegas, the county seat of this county, are located three large wool-scouring plants, each with a capacity of 2,500,000 pounds of wool per year. This home demand for wool is the secret of the good market of this product in Las Vegas.

The Atchison, Topeka and Santa Fe Railroad has 100 miles of track in San Miguel County, and the division headquarters is located in Las Vegas, where the monthly pay roll exceeds $30,000. This road has also a branch line running from Las Vegas to the Las Vegas Hot Springs, where upward of $1,000,000 have been spent in hotels, bath houses, and other improvements. It is here that the celebrated Montezuma Hotel is located, said to be the finest resort hotel between Chicago and San Francisco.

San Miguel County is known as the empire county of New Mexico. No combination of circumstances has yet been found powerful enough to direct the wholesale trade of the Territory from its natural center—Las Vegas. The largest wholesale houses in the southwest are located here, while having branches at Albuquerque, Socorro, and other points. Trade for Las Vegas comes by rail and wagon. It comes from the counties of Mora, Colfax, Taos, Santa Fe, Chaves, Lincoln, Valencia, and Socorro, there being more freight unloaded in Las Vegas and more loaded out than in any other city in New Mexico. This is certainly a good and true index of the business done.

Las Vegas, the county seat of San Miguel County and the commercial center of the Territory, has a population of 10,000 people, about equally divided between natives and Americans. In the way of public buildings it has a city hall, five public-school buildings, court-house, Masonic temple, opera house, Territorial normal school, Territorial insane asylum (of red and white cut sandstone), an academy, seminary, Jesuit college, convent school, Presbyterian mission school, Methodist manual-training school, Christian Brothers' institute, and a kindergarten. Two schools of music are also added to her educational facilities.

Las Vegas has two daily and five weekly newspapers, three banks, two building and loan associations, three hotels and many boarding houses, nine churches, a number of clubs, and all the leading civic and social societies, a roller flour mill, capacity, 50 barrels a day; a manufactory of mineral and carbonated waters, two wagon and carriage factories, a saddle and harness factory, electric-light plant, three planing mills, two cigar manufactories, and many other enterprises of less importance.

There are eight wholesale houses, whose trade extends throughout the Territory, while this volume of trade and the value of stocks they carry can not be duplicated west of Kansas City and south of Denver.

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An evidence of the healthy growth of Las Vegas can be had from the fact that not less than fifteen new commercial enterprises have been opened here in the past six months.

Respectfully yours,

W. C. REID.

Hon. MIGUEL A. OTERO,
Governor of New Mexico, Santa Fe, N. Mex.

CLIMATOTHERAPY AT LAS VEGAS HOT SPRINGS.

A remarkable combination of natural advantages of a health-giving nature exists in and about Las Vegas Hot Springs. Its location in this regard is peculiar. Situated in the northern portion of the county, it lies on the southern slope of the Canadian Valley, the course of whose waters, differing from that of either of the other valleys of the Territory, is directed toward the Mississippi. The main range of the Rockies forms the western boundary of this valley. A limb of the Rockies extends at about right angles east and west along the Colorado and New Mexico boundary line. The Raton Range is a part of this limb, some peaks of which are 8,000 feet in height. This high western and northern barrier protects the valley in question from the severe storms which arise in the great Northwest, and hence materially modifies the climate which exists within this basin. The protection of Las Vegas Hot Springs is also materially enhanced by the fact that it lies at the western entrance of the Gallinas Canyon, the high hills of the latter forming almost a complete circle about it. The range of hills forming this canyon farther west become mountains of considerable magnitude. All are covered with a heavy growth of yellow pine, pinon, and cedar trees, together with minor vegetation. There is no sufficient dust or sand upon these hills and mountains in condition to be disturbed by winds; hence, at Las Vegas Hot Springs sandstorms are unknown. Its distance from any center of population is such that it is undisturbed by the dust of streets. Through the Gallinas Canyon flows a small river by the same name, and in its immediate vicinity, close to the edge of the stream above referred to, within a confined area, the soil is penetrated from an unknown depth by some thirty hot mineral springs. Within the same field whence arise these springs lies an extensive peat bed, an antiseptic decomposition of vegetable matter, invaluable as a medicinal agent.

If one will study the atlas of 1894 by the Weather Bureau department of the Government, compiled from all the reports of the Weather Bureau stations from the organization of each to the end of 1891, he will observe that Las Vegas Hot Springs is in the center of what is known as the "dry belt of the West." This dry belt, with an irregular, constantly varying outline, extends north and south from the northern part of Texas through Mexico and into Colorado. Following the monthly charts in the atlas above referred to, one will observe that in January the storm line is the farthest away from him, extending about midway between longitude 95° and 100°. The general monthly precipitation throughout this area does not, then, exceed an inch. In February the storm line is seen to approach a little farther west; in March still farther. It is the rule that the western edge of the storm line has reached central New Mexico and Las Vegas Hot Springs in June. This storm line begins to recede in September; by October it has passed out of New Mexico on its eastern course, and the precipitation has again been reduced to a monthly average of only 1 inch. It is noticeable, then, that this dry belt has a rainy season,

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during which time a large portion of the average annual precipitation falls. It is observable in studying this storm line that north of the Raton Range, which is the northern boundary of the Canadian basin, it is greater. The storm line more quickly reaches Colorado and more slowly disappears from it. According to these Government reports, the average annual precipitation at Las Vegas Hot Springs is 12 to 14 inches, most of which falls during the summer months. It is further observed that there are few, if any, habitable portions of the United States having an average annual precipitation of less than above. That there should be some precipitation must be recognized as essential to life and comfort.

A study of the latitude of Las Vegas Hot Springs is interesting in this connection. Its latitude is 35½°, the same that exists in the northern part of Africa, including Morocco, Algeria, and Tunis, and also in the northern part of Arabia, portions of the world known to be extraordinarily dry.

While the location of Las Vegas Hot Springs is so favorable as regards its minimum amount of precipitation, it has not the high temperature that is generally found upon such latitude. This is explainable by its position in regard to the Rockies and its altitude, it being 6,767 feet above sea level. It is generally known that the impression prevails among people who have read of this place, but who have not personally visited the same, that because of its southern position the summers are extremely warm; because of its altitude the winters are severe. Life at the springs convinces one that the opposite is true. The southern position, added to the fact that a spur of the Rockies extends east from the main range along the Colorado border, protects it mainly from the northwestern storms and modifies the temperature of the winter months, so that in truth it is usually mild and delightful. The intensity of summer heat prevalent in southern latitudes does not exist in this location, because of the great altitude. It is thus seen that Las Vegas Hot Springs, together with other portions of New Mexico, has a favorable all year round climate.

The springs, the peat, the freedom from dust and heavy winds, the forests of pine and cedar, the natural scenery, the opportunities for out-of-door life, render this place, in particular, especially favorable for such people as are in quest of health. The medicinal value of the springs has been long recognized; their constituents are generally of the saline element. They vary, however, to a considerable degree, sulphur predominating in one, iron in another, lithia in another, sulphureted hydrogen gas in another; free carbonic-acid gas exists in most of them. They are of unquestionable value in numerous affections peculiarly favorable for their use, either external, internal, or both. The temperature of the hottest is 144° F.; most of the springs range in temperature from 122° to 138°. Combined with the peat in about equal proportions, a union is formed inestimable in certain diseases when prescribed in the form of baths.

All these facilities tend to make of Las Vegas Hot Springs what it is endeavoring to become—a health resort upon an extensive scale. It invites pleasure seekers as well as invalids; those who desire a rest from overwork and those who desire recuperation from some long illness. Its climate must be recognized as most favorable for such as have contracted incipient tuberculosis; those who wish to escape the affections due to a heated term of the lower altitudes; those who wish to escape the rigors of winter; those who wish to avoid suffering from hay fever; its waters invite such as are affected with diseas

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erally benefited by hot mineral springs. Its sanitation is perfect. Malaria does not exist; sunshine predominates, thus encouraging out-door life and sports of all kinds; therefore to the pleasure seeker as well as to the invalid Las Vegas hot springs offers attractions unsurpassed in the West, and is the property of the Atchison, Topeka and Santa Fe Railroad System, which system has erected numerous buildings at a great cost for the convenience of visitors, and the work of improvement is still progressing. The main building, named the "Montezuma," is a large structure of sandstone, beautifully situated on a commanding eminence overlooking the picturesque Gallinas Canyon, as it opens out toward the rolling meadows, which meadows give the name to the town of Las Vegas, 6 miles distant. From the broad verandas, extending the entire length of the front, east, and west sides of this building, a delightful view is obtained; on the one hand are mountains with their massive shoulders outlined against the skies; in front the little hurrying Gallinas River rushes along filling the air with the distant murmurs of its waters; in another direction the valley is seen to stretch far out to the horizon; little Mexican villages with their adobe houses are scattered on both sides of the stream. In many respects the surrounding country reminds one of Switzerland, and to those fond of tramps and excursions among the mountains it offers an endless variety. Another building just completed is a hospital for the care of those invalids who need quiet and such attention as can not be given in the Montezuma. The bath house and the peat house are prepared for such as require treatment there. Numerous cottages scattered about the plant, along the confines of a large park, are held in readiness for those who desire home life. The Springs Branch of the Santa Fe Railroad affords constant and easy communication with Las Vegas, where it connects with all through trains on the Santa Fe route.

There are other springs and artesian wells near to Las Vegas besides those at the Las Vegas hot springs; the two most celebrated are the Macbeth mineral wells, owned by Peter Roth, and the Onava alterative water springs, owned by Charles Wright; the first, the Macbeth well, is an artesian well of a depth of 338 feet, geologically speaking, in the lower part or bottom of the Jurassic formation and immediately over the Triassic formation, the Triassic forming the bed and bank of this ancient extinct Jurassic sea by curving from under to an anti-incline or uplift at this immediate location. The salts in the water are derived from a bed of seaweeds formed on the coast of this ancient extinct sea by a leaching through the ashes of the decomposed marine plant for ages, extracting therefrom a natural mineral which analysis shows to be a pure sodium or trisodium compound of salts from the algæ and fucus marina, namely, in proportion of sodium chloride, 35 grains; sodium carbonate, 9 grains; sodium sulphate, 1 grain; or 45 grains to each quart of water. These are the principal ingredients or elements of the salts found in the Macbeth mineral water. The water is absolutely free from the other alkalies, such as lime and magnesia, which renders all waters hard and unfit for drinking purposes. It is a most pleasant and palatable mineral water to the taste, and to which the most fastidious do not object; really a beverage after becoming accustomed to it. The trisodium compound is a solvent of mucus in catarrh of the stomach and biliary ducts, also solvents of albumen in the urine and found in Bright's disease of the kidneys; it also corrects the acidity of the blood, of the stomach and urine, such as lactic acid, uric acid, and lithiæma found in dyspeptics

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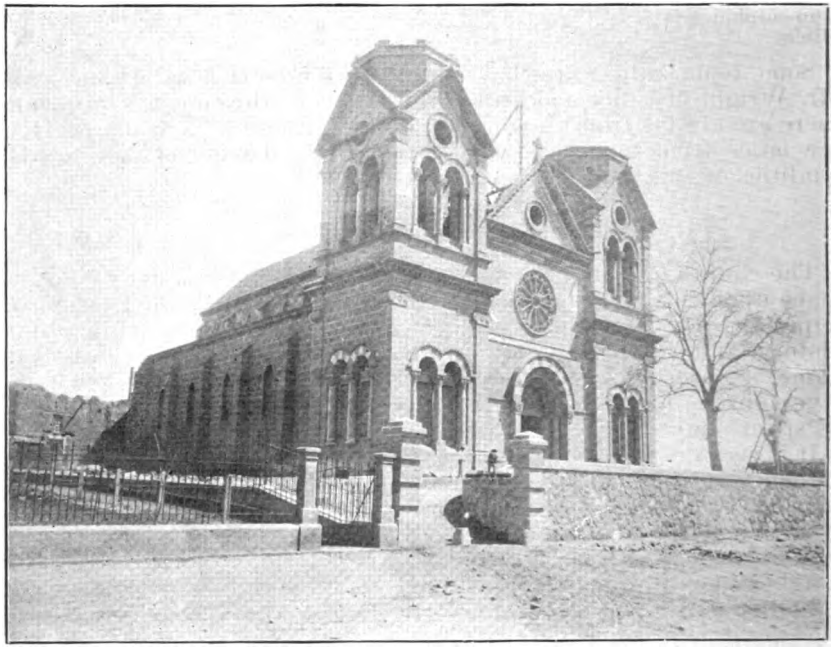

ST. FRANCIS CATHEDRAL AT SANTA FE.

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and disordered intestinal digestion, and is necessarily indicated in the rheumatic or gouty diathesis, gastric catarrh, dysentery, constipation, albuminuria or Bright's disease, and of the skin. It aids and promotes the appetite, stimulates the secretions, is antiacid, an eliminant, a diuretic, and a laxative.

Macbeth mineral water is not only known at home, but each week thousands of gallons are shipped abroad.

Onava alterative water, a sulphureted, carbonated, mineral water, incomparable as a system cleaner, blood purifier, and appetizer, is found at a depth of 250 feet, and has a chemical analysis in grains per gallon as follows:

Sodium chloride	3.009
Sodium carbonate	3.807
Sodium bicarbonate	49.356
Potassium sulphide	4.933
Iron sulphide	.503
Silica	.419

Some remarkable cures have been effected by this water, and while Mr. Wright does not make any pretensions at running a sanitarium, there are always from three to a dozen health seekers at his ranch, a few miles from town, who are there for the benefit of the curative qualities of Onava alterative water.

SANTA FE COUNTY.

The county of Santa Fe does not occupy as conspicuously large a place upon the map as some of the other principal subdivisions of imperial New Mexico; but owing to the rare charm attaching to its history, and that of the unique political capital whence it derives its name, its peerless scenic and climatic attractions, and its rich and diversified resources, it naturally takes first rank in interest among its sister counties.

It is the central county of the Territory; is rectangular in form, extends south a distance of 72 miles from the thirty-sixth degree of latitude, and measures 30 miles from east to west; embraces a total area of 1,498,600 acres, of which 975,000 are officially pronounced available for cultivation and pasturage, while thousands of the roughest mountain acres are clothed with fine timber and ribbed with valuable mineral-bearing veins. It is crossed from east to west by the great transcontinental railroad of the Atchison, Topeka and Santa Fe Company, which operates over 70 miles of road in the county, and is tapped from the north by the New Mexico division of the Denver and Rio Grande Railroad, which extends from Espanola to Santa Fe, or 38 miles in the county. Excellent wagon roads also reach all the towns and settlements.

From the summit of Mount Baldy the surface of the county presents a vivid and magnificent panorama of mountains, mesas, and valleys, with numerous streams of limpid water rushing down huge mountain shoulders, over precipices and massive bowlders, into deep and narrow gorges and widening valleys, flashing in the sunlight like ribbons of silver, in their hurried and heedless race to the Rio Grande on the west, and with the lofty mountain peaks of southern and northern New Mexico and even Colorado swimming in the blue air of the dreamy distance. The main range of the Rockies on the east and the Valles and Jemez mountains beyond the Rio Grande on the west shelter this favored locality from violent winds and render the climate

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remarkably mild and equable considering that the altitude of the valleys varies from 5,500 to 7,500 feet above sea level. Doubtless this circumstance, together with the fertility of the soil, excellence of the water, plenitude of timber, and the many marked manifestations of rich veins and deposits of gold and silver bearing material a few miles south, prompted the intrepid Spanish explorers to locate a permanent colony and mission at Santa Fe, or the City of the Holy Faith of Saint Francis, as early as 1605. The wisdom of this selection has been plentifully demonstrated during the nearly four centuries that have since melted into the past. With the exception of the twelve years following the bloody and transiently successful revolt of the Pueblo Indians in 1680, Santa Fe has ever since been recognized as one of the most important outposts of civilization and commerce in the southwestern world, being continuously the political and military capital of this region under both Spanish and Mexican rule, and, having witnessed the frontier line of the United States carried thousands of miles out into the Pacific Ocean, still maintains its supremacy as the capital city of New Mexico, the county seat of Santa Fe County, and the most delightful residence city in the Rocky Mountains.

MATERIAL RESOURCES.

The assessed valuation of the real and personal property of Santa Fe County for the current year, excluding the large amount exempt from taxation under the law, aggregates $1,768,150.68, of which Santa Fe's share is placed at $338,155.10. There are about 500,000 acres of public land in the county, subject to entry at Government prices, and 557,880 acres more are included in Spanish and Mexican grants, the titles of which are purchasable at low rates and on easy terms. It may be added further that the county affords about 475,000 acres of good grazing land, partly covered with timber, and about 500,000 acres of arable land, 200,000 acres of which could be irrigated. In the absence of exact data, the land actually being cultivated by means of irrigation is conservatively estimated at 25,000 acres, while probably 20,000 acres more are yearly planted to crops subject to the chances of enough rain in the growing season to mature them. Wherever the valley and mesa lands of the county have been brought under the magic influence of systematic irrigation the results have uniformly proved most satisfactory, and naturally this stimulates enterprise annually to enlarge and extend existing irrigating systems and thus gradually increase the number of acres that can be depended upon to yield regular profits.

This is notably true of the Espanola Valley, in the northern part of the county. Plentifully watered by the Rio Grande and its tributaries, the Chama, Santa Clara, and Santa Cruz, this beautiful valley is now most of it under cultivation and evidences of contentment and prosperity are noted on every hand. The acreage of wheat, corn, oats, beans, and kindred crops increases each year. Alfalfa yields three and sometimes four crops per year. Sugar beets, carrying a very high percentage of saccharine matter, can be readily grown there. The orchards of apple, peach, pear, plum, prune, cherry, apricot, and nectarine trees have for several years been large and regular shippers of the choicest fruits of the earth, and their vigorous and thrifty appearance gives cheering and aromatic promise of multiplying profits in the future. All kinds of small fruits, including strawberries, raspberries, blackberries, and currants flourish.

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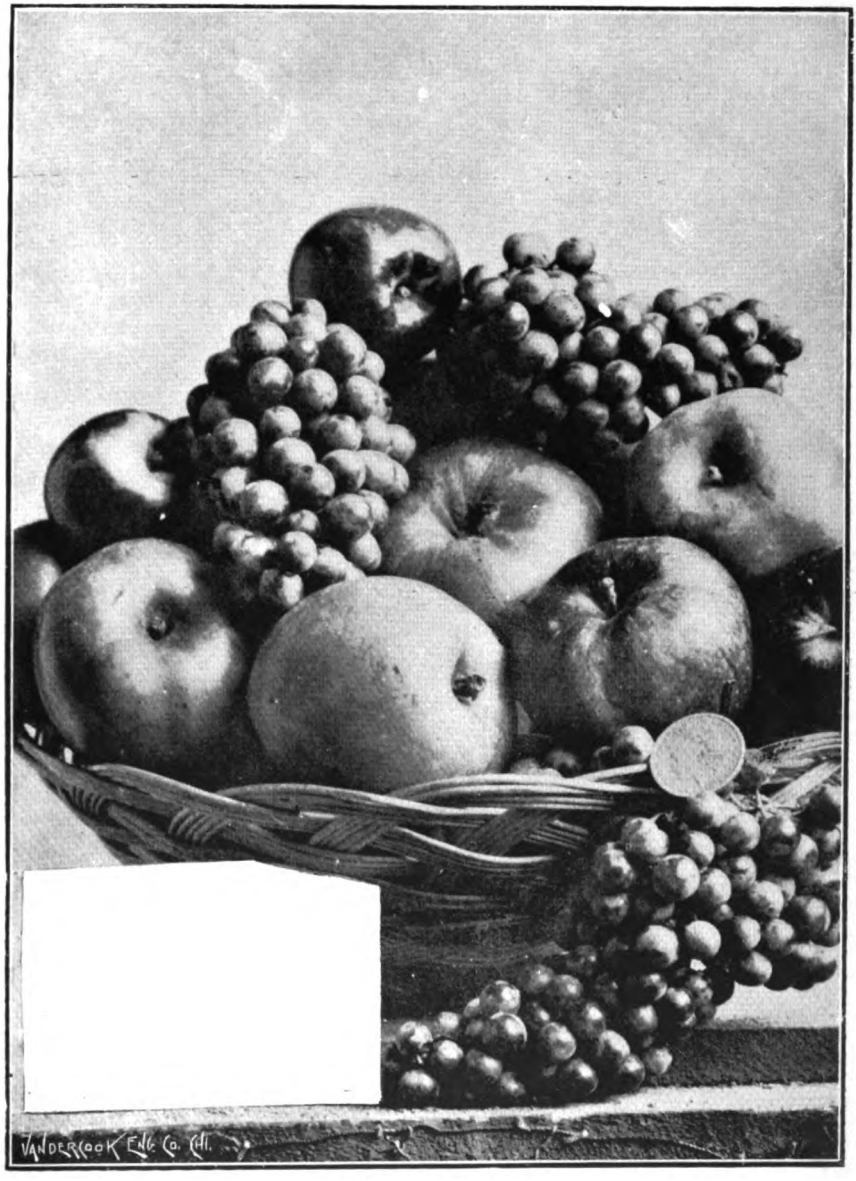

BASKET OF SANTA FE COUNTY FRUIT.

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Several extensive vegetable gardens, where lettuce, radishes, onions, asparagus, green pease, sweet corn, beets, tomatoes, celery, parsnips, and other table luxuries are raised in great profusion and perfection for the mountain markets of northern New Mexico and southern Colorado, have not only proved to be constant bread winners, but surplus producers. So far as productive qualities are concerned, these remarks may be applied to nearly all of the irrigable and arable lands of the county, particularly the Santa Fe, Tesuque, and Nambe valleys.

The distinguished and lamented Archbishop Lamy introduced the culture of choice fruits, flowers, and vegetables into Santa Fe and elsewhere in New Mexico about fifty years ago. The good man lived long enough to witness the complete success of his experiment and personally taste the rare flavor of its luscious results. It was soon found that all the most desirable varieties of temperate zone fruits, including the largest and finest flavored French cherries, could be grown here in perfection and in quantities only limited by the extent of land and available water supply; that the soil and sunshine of Santa Fe would produce roses rivaling those of France and Italy in beauty and fragrance, and that the conditions were peculiarly favorable to the cultivation of all kinds of edible vegetables. It thus happens that the orchards and gardens in and about the capital city are not only veritable beauty spots, either when blushing with sweet prophecies of better things to come or burdened with matured and mellow fruitage, but provide many families with the comforts of life. Some of these orchards and gardens are irrigated from ancient acequias taken out of the Rio Santa Fe, and others are watered direct from the mains of the local water company.

POSSIBILITIES OF IRRIGATION.

The extent of land so far devoted to the twin arts of agriculture and horticulture is comparatively small, because the natural flow of water in the mountain streams is not sufficient during dry seasons to justify taking out much longer or larger irrigating ditches. These streams carry immense volumes of flood water during the months of February, March, and April, when the snow is melting in the high altitudes and the spring rains are in progress, and again become rushing torrents during the heavy rains of July and August; but, coming from precipitous heights and pouring into expanding valleys and plains below, their invaluable surplus is soon absorbed by the porous soil or drank up by the thirsty air. So, during the months of May and June, when most needed for irrigation purposes, the supply of water is smallest. The remedy is obvious. Wisely located storage reservoirs, like those in southern California or in southwestern New Mexico, capable of holding until needed the flood waters of winter, spring, and midsummer, would render it possible to reclaim and make fruitful thousands of acres of as good land as any now under cultivation in the county.

Careful observations in the canyon show that Santa Fe Creek has a flow of 80 acre-feet per day during the months of February, March, and April; that the rainfall in Santa Fe during July and August varies from 2.50 to 3.50 inches, while in the mountains and canyons composing the watershed of the creek and embracing an area of about 50 miles the rainfall during these two months is not less than 6 inches; that the rainfall in September sometimes amounts to nearly 3

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inches; and that after the irrigation season closes, or during the months of November, December, and January, there is always surplus water. In the light of these facts, after making liberal deductions for evaporation and seepage, competent hydraulic engineers reach the conclusion that the storage of the flood or waste waters of the Santa Fe would reclaim and render valuable from 20,000 to 25,000 acres that are now arid and practically worthless.

The Nambe, with numerous natural storage basins along its course, carries three or four times as much water as the Santa Fe, and hence is capable of reclaiming fully 60,000 acres. The Tesuque has about the same, and the Galisteo about half the flow of the Santa Fe.

The surplus waters of the four streams named could be conveniently stored and distributed over the Santa Fe plains as needed, and it will be perceived that, without taking into account the Rio Grande, their combined capacity would be sufficient to reclaim over 100,000 acres in addition to the lands they are now watering. These lands can be secured at Government prices, or on most favorable terms of private owners, and considering that their soil is as fertile and easily tilled and only requires water to become as fruitful as lands in the Espanola Valley that annually yield excellent returns and are held at from $30 to $300 per acre, the thoughtful reader will be able to form an approximate notion of the large direct and indirect benefits that would flow from the proposed system of storage reservoirs. It would not only richly reward the capital and energy invested in constructive work, but would prove a blessing to many deserving men by affording them much coveted opportunities to gain good homes and comfortable incomes in this almost ideal climate. Ten faithfully and intelligently cultivated acres, one half planted to the varieties of fruits that flourish so well at Santa Fe and in the Espanola and Tesuque valleys, and the other half devoted to the culture of table vegetables, would furnish ample occupation and support for a family. The small fruits and vegetables would pay well from the very start, while the trees would begin to bear fruit in three or four years. Celery of superior quality, possessing in a high degree the delicious nutty flavor so much prized by epicures, readily grows here, and might be made a source of large and constant profits. Acres of asparagus, cabbage, cauliflower, onions, oyster plant, and parsnips would reward industry. Experiments prove that sugar beets, grading higher in sugar content than those of California and Nebraska, readily grow here, and will be raised on a large scale as soon as the eyes of capital are opened to the wisdom of erecting factories at Santa Fe for their reduction. Fields of alfalfa, wheat, oats, and corn would pay. Irrigated lands are unfailing crop producers. The rapid and successful development of the Cochiti, south Santa Fe County, and other near-by mining districts, with the certainty that the number of consumers there will soon be multiplied to thousands, guarantees the best possible market for all that these lands could produce. What an inviting field for the establishment of colonies. What tempting and unsurpassed opportunities are thus presented to the many invalids who are seeking and finding fresh health and vigor under the benign influences of the almost perpetual sunshine and the pure, dry, rarified air of a region over which skies of the softest blue tenderly bend, as if bestowing a special blessing.

In consequence of the large shipments of cattle and sheep during the past few years, the extensive areas of fine grazing land are not nearly as well stocked as they should be. According to the books of

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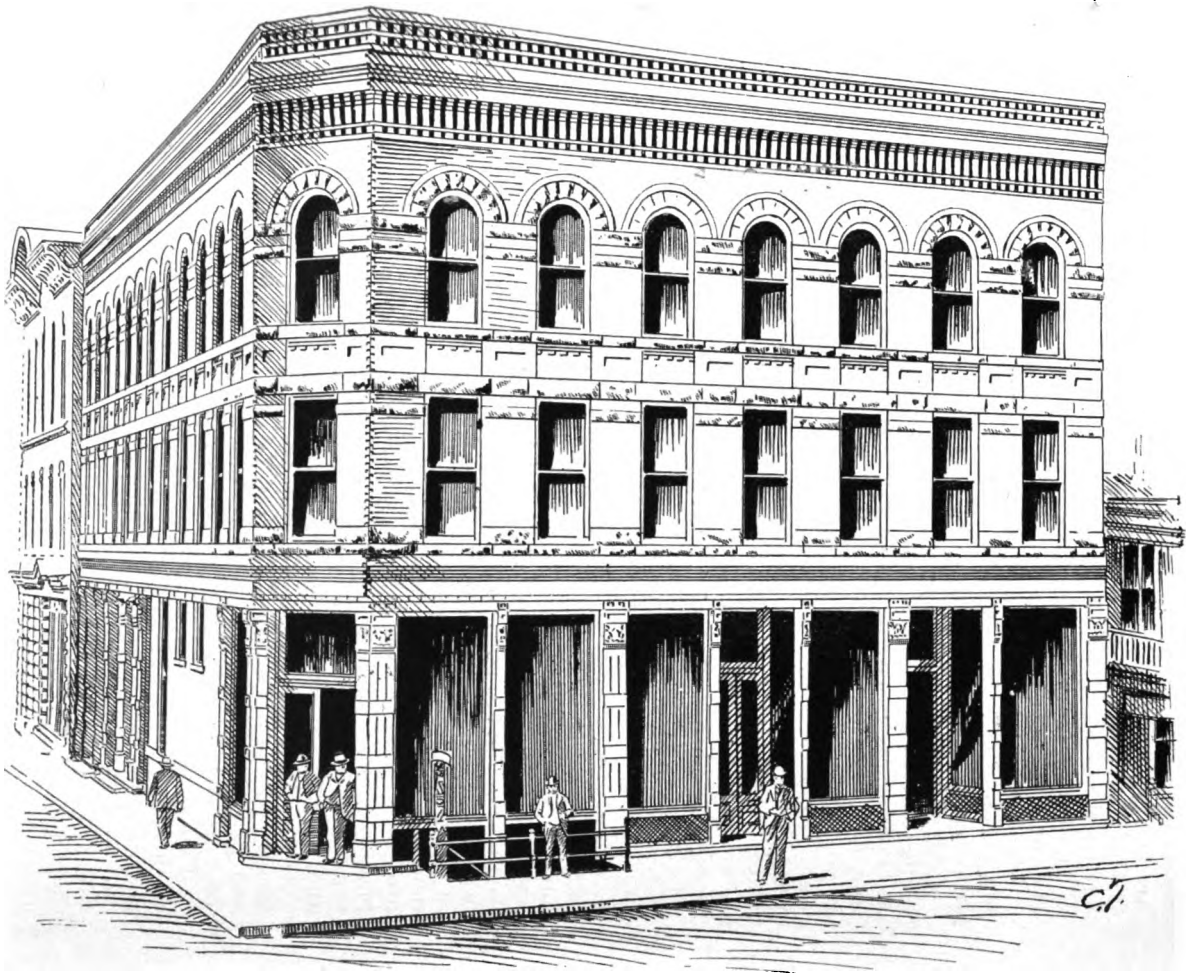

BUSINESS BLOCK IN SANTA FE.

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the assessor, the live stock in the county is classified as follows: Horses, 1,741; cattle, 1,906; sheep, 48,310; goats, 3,793; mules and burros, 510. Clearly the field for stock growers is full of invitation. The experiment of raising goats on a large scale, chiefly for the sake of their pelts, has been undertaken.

MINING—PAST, PRESENT, AND PROSPECTIVE.

In marked contrast with the prolific orchards, fields, meadows, and gardens of the northern valleys and mesas, but even more important and interesting, are the gold, silver, copper, lead, iron, zinc, and turquoise bearing mountains and hills about Cerrillos, Dolores, Golden, and San Pedro, and the great anthracite and bituminous coal measures at Madrid, in the southern part of the county. Unquestionably the gold found in the locality indicated was one of the principal reasons why the Spaniards took such desperate chances to plant and maintain colonies in this county centuries ago. They extensively worked the famous old and new placers at Dolores and Golden two or three hundred years ago, rescuing therefrom several million dollars' worth of gold, mainly by means of the labor of enslaved Pueblo Indians and the rudest possible methods, even obtaining scanty supplies of water by melting snow with heated rocks; and their descendants are still working these inexhaustible deposits of pay gravel by means of "dry washers." Much of the gold is quite coarse. Years ago a nugget was found near Dolores that yielded about $400, and after heavy rains nuggets worth several dollars each are often picked up. Except for the absence of water the stream of gold from these fields would be immense and continuous. Modern skill and enterprise have partly solved the problem by the agency of deep wells and powerful steam pumps, and can be relied upon finally to achieve success in a much larger degree. Artesian-well experiments have so far failed, but confidence is entertained that ultimately an artesian-well flow will be secured. The lodes in the surrounding hills, whence the placer deposits undoubtedly crumbled and washed down, are of inestimable value. Indeed, the range of mountains extending from Dolores south about 8 miles is virtually one vast upheaval of mineralized matter. Cunningham and several other hills of the range are veritable mountains of ore of high enough grade to warrant the belief that the whole mass will be worked when the requisite facilities are introduced.

Some of these lodes were developed to the extent of hundreds of feet many years ago, and there are evidences that much mineral was extracted. It is estimated that gold to the value of $5,000,000 was taken out of the old workings of the Ortiz mine, and the wealth of several of the prominent native families of the Territory can be traced to this source. This mine is now being systematically worked and its free milling output treated at a plant on the ground. In the same vicinity is the Benton mine, from one pocket of which $60,000 worth of ore was mined in a few months some years ago. Adequate reduction works near at hand are needed to make this and other lodes in the Ortiz Mountains steady producers.

At Golden, a few miles south in the same range, are found numerous lodes of gold and silver bearing ore, as well as blanket deposits of lead and iron carbonates that carry both of the precious metals. Several of these lodes are undergoing systematic development, which promises rich results. Tests at small local plants prove that most of the ores will readily yield their values in Huntington mills. Two

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miles farther south are the great San Pedro copper mines, showing large bodies of copper ore which pay handsomely at the smelter near by. Owing to litigation the mines mentioned were not worked for several years, but are now being operated under competent management, and both mining and reduction facilities are being increased as rapidly as possible.

Large bodies of silver-bearing lead and zinc ore have been opened at Cerrillos, but the low price of silver and other causes have prevented their being worked during recent years. The workings of the Cash Entry mine are very extensive, and it is understood that great bodies of ore are disclosed that would pay well at the present prices of silver and lead. The large bodies of iron, zinc, and lime will, some day, be in demand. A fine, modern smelter of 80-tons capacity occupies a prominent and desirable site at Cerrillos, but has not yet been blown in.

At Turquesa, a few miles north of Cerrillos, are located the celebrated Tiffany turquoise mines, from which thousands of dollars' worth of magnificent gems have been extracted and shipped to New York. Experts pronounce them superior in purity, luster, and enduring sky-blue color to any produced in the world, surpassing the turquoise of Persia in the exact tint desired. Garnets of rare beauty are also found in the county.

Much prospecting is going on in the mountains near the city of Santa Fe, and some fine-looking specimens of copper, iron, and mica have been brought in, but not enough work has been done to determine whether valuable bodies of mineral have been found.

COAL MEASURES AT MADRID.

The coal measures at Madrid, just south of Cerrillos, show three distinct veins from 5 to 10 feet thick, extending for miles, and are pronounced practically inexhaustible. The output of these veins is remarkably varied, including soft, free coking, noncoking bituminous, semianthracite, and anthracite, and in places natural coke is found. The intimate association of bituminous and anthracite veins appearing in alternate strata in the same mine is a phenomenon not observed elsewhere, and one that deeply interests geologists. Purely practical people, however, are contented with the knowledge that the veins contain enough for many generations to come, and that it is nearly all of superior quality. The mines are operated by the Cerrillos Coal Railroad Company, whose tracks reach the workings, give employment to 554 men, and produce annually about 250,000 tons of coal, worth about $450,000. The anthracite mine produced 25,000 tons, worth $100,000, last year. The company also operates a large coke-making plant near the mines, and finds a ready market for its product at the different Territorial smelters and at El Paso. Right here it may be added that the construction of a mammoth electric plant, for the purpose of generating and transmitting power to operate the Albemarle mine and mill in the Cochiti mining district, is now in progress at Madrid, where the vast accumulation of slack affords unlimited quantities of cheap fuel.

SANTA FE.

The historic city of Santa Fe, seat of the government of the Territory of New Mexico and the county of Santa Fe, enjoys the distinction of being the oldest town and the oldest capital on the American

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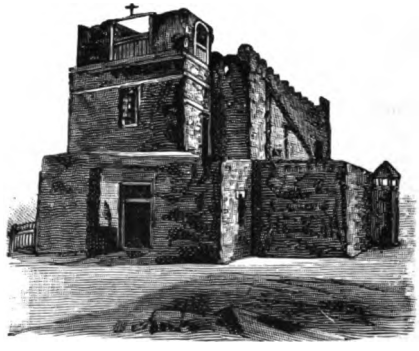

SAN MIGUEL CHURCH, SANTA FE.

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continent. Its permanent settlement by Europeans antedates the founding of Jamestown and also the landing of the Pilgrim Fathers at Plymouth more than twenty years. The thrilling and romantic incidents composing its story, the protracted and bloody struggles with hordes of savage Indians, the capture and pillage by hostile Pueblos in 1680, the general massacre of missionaries and explorers and flight of the governor and a few followers in the night to El Paso, the reserving of some of the handsomest Spanish maidens for wives of favored warriors, the desecration and destruction of the Christian churches and the restoration of the worship of snakes and stone idols, the reconquest by Diego de Vargas twelve years later, the terrible punishment visited upon the rebellious Pueblos, the change from Spanish rule to the rule of the triumphant Republic of Mexico, the capture by the United States forces under General Kearney and the building of Old Fort Marcy in 1846, the stirring scenes accompanying the distribution of the immense traffic of the Santa Fe trail, the wild deeds of desperadoes and the fabulous hazards at cards in the days before the advent of the railroad, afford the material for an epic poem of deep interest.

Here, so carefully preserved that the marks of its three hundred and one years of age are perceptible, is located the noted "Adobe Palace," which was the official residence of the Spanish and Mexican governors, and since the Mexican war has been the headquarters of all the Territorial governors and secretaries appointed by the different Presidents of the United States. Here is situated the oldest house standing on American soil, and near by is the San Miguel church, first built in 1540 and still used as a regular place of worship. Here stand the beautiful and imposing new capitol building, the massive modern cathedral of St. Francis, the large and enduring stone Federal building, the modern penitentiary of the land, San Miguel College, Loretto Convent, St. Katherine and the United States Indian schools, the New Mexico Industrial School for the Deaf, Dumb, and Blind; Presbyterian, Episcopal, and Methodist churches; the large brick Presbyterian mission school, besides many fine modern business blocks and private residences. Here side by side are object lessons whereby the civilization of the seventeenth and eighteenth centuries can be studied in contrast with that of the present day as nowhere else in America.

Environed by protecting hills and thus exempt from heavy winds, surrounded by enchanting natural scenery, beautified by orchards and gardens of flowers, blessed with a climate that is free from extremes of heat and cold, and air that is pure and tonic; supplied with an abundance of pure water for domestic and irrigating purposes from the extensive storage reservoir in the mouth of Santa Fe Canyon; furnished with competing rail, express, and telegraph communication with all outside points; the headquarters of all the Federal and Territorial officials; the meeting place of the legislature, the supreme court, the United States Court of Private Land Claims, the United States and Territorial district courts, and the various Territorial boards; the home of the archbishop of New Mexico, Arizona, and Colorado; putting in a modern sewerage system, and preparing to build large new schoolhouses up to the highest standard of excellence, Santa Fe is naturally forging to the front as a popular residence city.

The waterworks are located about 2 miles up the Rio Santa Fe, cost about $300,000, and consist of a large reservoir or artificial lake secured by means of a semicircular dam across the canyon—600 feet

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long, 350 feet thick where securely tied to berrock, and 120 feet high—with mains and service pipes extending to every part of the city. A smaller reservoir on the hillside supplies the power required to operate the city's electric-light plant. The present population is about 8,000.

Cerrillos is the principal trading point in the southern, and Espanola in the northern section of the county. As has been shown in previous parts of this review, both have splendid resources, both are flourishing and progressing, like all parts of the county; both are yearly building large business houses and better private residences; both have good schools and several churches, and both are clearly destined to grow in business and population.

Among the substantial improvements at Cerrillos may be mentioned a handsome stone schoolhouse, while an idea of the trade of Espanola may be gained from the fact that one general store there annually sells goods to the amount of about $150,000.

Possessing material resources unrivalled in value and variety, and surrounded by exceptionally favorable natural conditions, the people of Santa Fe County are enjoying a prosperous present and contemplating the future with unbounded confidence.

WOMAN'S BOARD OF TRADE.

The woman's board of trade of Santa Fe has very recently passed its seventh anniversary. The founder of this organization is Mrs. Cora L. Bartlett, wife of the present solicitor-general of the Territory of New Mexico.

The object of the organization is to advance every interest pertaining to the welfare and prosperity of the "oldest city in the United States." This body is regularly incorporated under the laws of the Territory of New Mexico. The standing committees for work are, finance, library, visiting and relief, intelligence, improvement, industrial house, woman's exchange, prevention of cruelty to animals, reception and education, press, and cemetery.

The public plaza is entirely under the direction of the Woman's Board of Trade of this city, and the city of Santa Fe appropriates $200 per year towards its support. A free public library of over 1,200 volumes and a free reading room, with all the leading magazines and papers, are open to the public.

A half, or pauper rate, is granted this board by both the Atchison, Topeka and Santa Fe Railroad and the Denver and Rio Grande Railroad companies, and with the fiscal year ending June 30 there have been 36 half-rate tickets granted. It also owns a pauper burial ground for the benefit of those too poor to purchase lots.

The visiting and relief work is the most important of all its branches, as hundreds are given relief in one way or another every year.

The cemetery committee which has had charge of Fairview since May 1 has expended $166 cash, besides donations of labor, lumber, water, etc.

The board owns 25 shares of stock in the fruit evaporating company, its object being to assist in establishing and promoting any worthy enterprise.

The treasurer's report up to June 30, 1899, shows a balance on hand at that date of $220.76. Total receipts from all sources, $1,038.61. The expenditures from this amount for salary of librarian, relief work, policeman for plaza, purchase of books, etc., amount to $817.85.

The woman's board of trade prides itself on the businesslike way in which its affairs are conducted, as well as its meetings. Its

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membership remains about the same (31 members) and unlimited. Every progressive woman in Santa Fe should be a member of this board, granted, of course, that she be willing and is so situated that most of her time can be given to work for the public.

The officers for the year 1899 are as follows: President, Mrs. Iad Rivenburg; vice-presidents, Mrs. George H. Wallace, Mrs. Creighton, and Mrs. Warner; recording secretary, Mrs. Anita Chapman; corresponding secretary, Miss Mamie Morrison; federation, Evaline Crichton; treasurer, Miss Bertha Staab; chairman of State correspondence for G. F. W. C., Mrs. M. J. Warner.

EARLY HISTORY.

In 1541, when Coronado passed through the then unexplored country in search of the fabled Seven Cities of Cibola, he found an Indian pueblo or town already established upon the spot where the city of Santa Fe now stands. It was undoubtedly a place of much importance among the tribes who occupied the country at that time, as Coronado estimated the population at 15,000 souls. The many natural advantages of the location early attracted the attention of the Spanish settlers, and about the year 1600, perhaps sooner, it became a permanent Spanish town and the seat of government for that part of New Spain which was ceded to the United States in 1848.

On August 8, 1680, the Pueblo Indians, under the leadership of Pope, a Taos Indian, revolted against the Spanish and began a war of extermination on the invaders. So successful were they in the uprising that on August 21 of the same year the Spaniards were compelled to evacuate the town and retreat to a point near what is now the city of El Paso, Tex. So soon as the Spanish were gone Santa Fe was partially destroyed by fire. The churches and monastery were burned save the adobe walls, the official documents furnished fuel for a huge bonfire in the plaza, and as far as possible all evidences of the Christian religion were wiped out.

Santa Fe, and in fact the whole land, remained in possession of the Indians until September 13, 1692, when Don Diego de Vargas Zapata Lujan, at the head of 80 mounted Spaniards and 100 friendly Indians, after a battle of eleven hours, defeated the Pueblos and regained possession. After that memorable fight the Spanish maintained their supremacy in New Mexico until August 18, 1846, when Colonel Kearny, at the head of a detachment of United States troops, entered Santa Fe and took possession of it in the name of the United States. It is impossible to here go into details of the history of the city before or after the American occupation, interesting as it is, but in the light of that history no other city in the entire country is so rich in tradition and in historic events as this ancient city of the Spaniards.

PLACES OF INTEREST.

To enumerate all the places of interest in Santa Fe would require entirely too much space for the purposes of this brief sketch, but a few of the most important are:

The Territorial library, containing the ancient Spanish and Mexican archives from 1621 to 1846.

San Miguel Church, built in 1540, partially destroyed in the revolution in 1680, reoccupied in 1692, and completely restored in 1710. This is the oldest church in the United States and contains many relics of the early days.

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The old house, believed to antedate the Spanish occupation.

The Cathedral of San Francisco, behind which is the chancel of the old parish church, with a carved and painted reredos, both curious and interesting, erected by Governor Del Valle and his wife in 1761.

The cathedral museum, containing many Spanish paintings and other objects of interest.

The Territorial historical rooms, full of antiquities of historic interest.

Old Fort Marcy, the commanding situation famous in all the sieges of the city; ruins of the old fort built by Colonel Kearny in 1846.

The garita, on the road to old Fort Marcy, by the west wall of which the leaders of the revolution of 1837 were executed.

The plaza in the center of the town, around which cluster many memories of the conquest of the land by the hardy Spaniards and of the stirring scenes of more recent days. The soldiers' monument is located in the center of this park.

The Church of Our Lady of Guadalupe, with its large and interesting altar piece on canvas, containing six pictures of the appearance of the Virgin to Juan Diego, and other paintings and wood carvings.

Monument to Kit Carson in front of the Federal building.

The Rosario Chapel, erected on the spot where De Vargas made his vow before the surrender of the city in 1692.

The most interesting of all the buildings is, without doubt, the governor's palace, an adobe structure built in 1598 and continuously occupied by the Spanish, Mexican, and American governors for three hundred years. The men who have lived and conducted the affairs of state in the old pile included some of the foremost names of the land, not only of the Territory but of the Eastern States.

To quote from the words of Ex-Governor Prince, author of the most authentic and complete history of New Mexico extant:

Without disparaging the importance of any of the cherished historical localities of the East, it may be truthfully said that this ancient palace surpasses in historic interest and value any other place or object in the United States. It antedates the settlement of Jamestown by nine years and that of Plymouth by twenty-two, and has stood during the two hundred and ninety-nine years since its erection, not as a cold rock or monument, with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living center of everything of historic importance in the Southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a Territory, this has been his official residence.

From here Onate started, in 1599, on his adventurous expedition to the eastern plains; here, seven years later, 800 Indians came from far-off Quivirato to ask aid in their war with the Axtaos; from here, in 1618, Vicente de Salivar set forth to the Moqui country, only to be turned back by rumors of the giants to be encountered; and from here Peñalosa and his brilliant troop started on the 6th of March, 1662, on their marvelous expedition to the Missouri; in one of the strong rooms the commissary-general of the inquisition was imprisoned a few years later by the same Peñalosa; within its walls, fortified as if for a siege, the bravest of the Spaniards were massed in the revolution of 1680; here, on the 19th day of August of that year, was given the order to execute 47 Pueblo prisoners in the plaza which faces the building; here, but a day later, was the sad war council held which determined on the evacuation of the city; here was the scene of the triumph of the Pueblo chieftains as they ordered the destruction of the Spanish archives and the church ornaments in one grand conflagration; here De Vargas, on September 14, 1692, after the eleven hours' combat of the preceding day, gave thanks to the Virgin Mary, to whose aid he attributed his triumphant capture of the city; here, more than a century later, on March 3, 1807, Lieutenant Pike was brought before Governor Alencaster as an invader of Spanish soil; here, in 1822,

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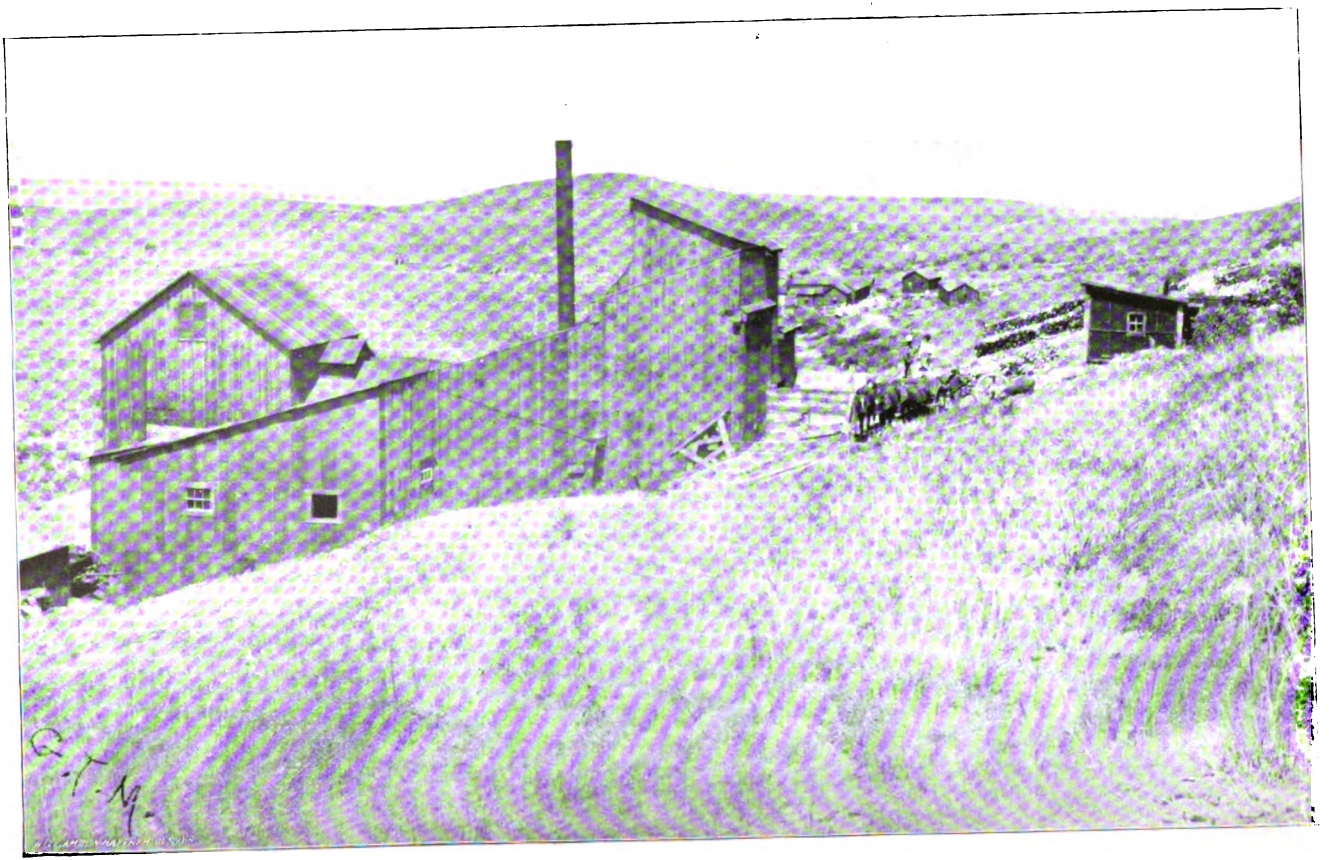

THE MILL ON SENATOR ANDREWS'S PROPERTY.

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the Mexican standard, with its eagle and cactus, was raised in token that New Mexico was no longer a dependency of Spain; from here, on the 6th day of August, 1837, Governor Perez started to subdue the insurrection in the north, only to return two days later and to meet his death on the 9th near Agua Fria; here, on the succeeding day, Jose Gonzales, a Pueblo Indian of Taos, was installed as governor of New Mexico, soon after to be executed by order of Armijo; here, in the principal reception room, on August 12, 1846, Captain Cooke, the American envoy, was received by Governor Armijo and sent back with a message of defiance; and here, five days later, General Kearny took formal possession of the city, and slept, after his long, weary march, on the carpeted earthen floor of the palace.

Coming down to more modern times, it may be added that here Gen. Lew Wallace wrote Ben-Hur, while governor of the Territory, in 1879 and 1880.

SIERRA COUNTY.

There has been a remarkable and gratifying development of the two principal industries of this county during the past two years, and latest reports prove that in both stock-raising and mining interests this progress is in full tide.

Though small in area, Sierra County contains a large proportion of rich pasture lands, and the cattle interests are perhaps the most uniformly prosperous. At present there are upon the various ranges 130,000 head of cattle, 100,000 sheep and goats, and some 16,000 horses. About one-tenth of the cattle is owned by the Las Animas Cattle Company, the remainder being well divided between a great many smaller ones. The profits of the industry remain with and redound to the benefit of the community.

In agriculture there has been little progress. About 6,500 acres are under cultivation out of some 300,000 acres of good, arable land that could be brought under ditch without too great expenditure. The farmers are prosperous and find a ready market for their entire product in the mining camps and at the cattle ranches. The prices they get would excite the envy of a Kansas farmer: Hay, $12 to $16 per ton; grain, 1 to 1½ cents per pound; potatoes, 2 to 2½ cents per pound; apples, 2 to 5 cents per pound. The product of the farms does not near supply the needs of the towns and ranches, and the merchants get their largest supply from Kansas, Colorado, and California.

POPULATION.

The population of the county is between 5,000 and 5,500, and is composed of two-thirds American miners and settlers and the remainder of the native Spanish-American people. There are no Indian residents within 150 miles, and those only a miserable remnant, kept strictly upon an Arizona reservation. The native Mexicans are a peaceable, frugal, and industrious race, and they afford an increasing source of cheap labor in mine and field.

PUBLIC SCHOOLS.

Excellent schools are maintained in seventeen school districts, under the supervision of the county school superintendent. Eight to ten months of the year are devoted to the education of children, and the teachers selected are of the very best character. The school fund has always been cherished, and commodious, substantial, and handsome schoolhouses have been built and are building. In all departments of primary education the school system of Sierra County will bear comparison with communities otherwise far more advanced.

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CLIMATE.

It is not too much to say of this land of sunshine that there exists a perpetual summer. There is but just enough of cold in the months of November and December to mark the change from summer to winter, while a fall of snow is rare, and at most does not remain upon the ground more than a few days. In the higher portions of the mountain ranges some snow is, doubtless, preserved during the colder months, and serves to maintain the summer streams. With such a winter temperature it might be expected that a very high thermometer would rule in summer, but such is not the case. From 90° to 95° in the shade is the greatest heat recorded, and from 20 to 30 below freezing point the most severe cold. The altitude—4,000 to 5,000 feet—of the main portions of the region will account for these moderate extremes. In such a climate mining operations are pursued to the greatest possible advantage, and agriculture aided by irrigation has no drawbacks. The devastations of snowslides and blizzards are here unknown, and the same may be said of pneumonia, that scourge of the miners in the North.

THE SANTA FE RAILROAD.

The Atchison, Topeka and Santa Fe Railroad passes through Sierra County, like the river, from north to south. Its distributing points are at Lake Valley for the south and at Engel for the east, from whence well-equipped stage and freight lines penetrate to the different towns and villages of the county. The Santa Fe directory has done much to develop the resources and aid in the growth of this section by granting low rates of transportation on ores to the great smelting points of Colorado, and of Kansas City, Socorro, N. Mex., and El Paso, Tex. For the 740 miles from Lake Valley to Pueblo and Denver the rate is but $5.80 per ton. Some important branches and extensions are contemplated to penetrate to the most remote mining camps of this region, and it is the aim of the directory to foster and sustain, to the extent of its power, the rapid growth of the mining industry. An immediate improvement is the extension of the Lake Valley branch to Hillsboro, the county seat, which will bring the road within 12 miles of the most distant mines in the southern half of the county.

WAGON ROADS.

The roads are of good grade, well-maintained repair, and conduct through the most important districts and reach the more notable mines. Roads from the agricultural lands enable the farmers to sell their produce in the markets of the mining towns, where they obtain prices really remunerative.

LABOR AND WAGES.

Miners earn $3 and $3.50 per day; laborers $1.50 to $2.50. Most of the labor is performed by the Mexican people, and of these there has been, with the growth of the mining industry, and from the neighboring lands of Texas and Mexico, a steady and sufficient immigration. Skilled miners from the North are constantly arriving, and so far no difficulty on the score of help has been experienced.

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THE TRIPPE MINE, SIERRA COUNTY.

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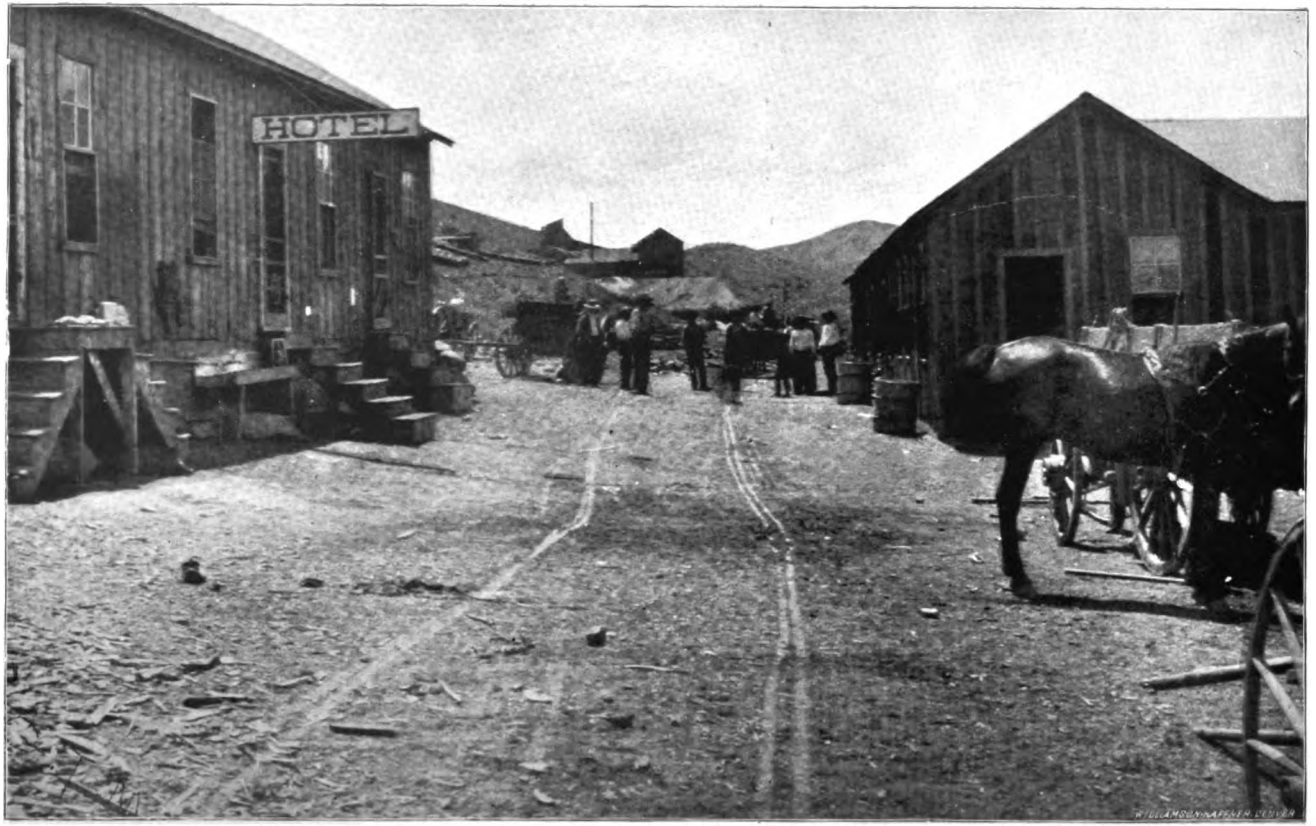

SOME OF THE BUILDINGS ON SENATOR ANDREWS'S PROPERTY.

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LUMBER, TIMBER, AND FUEL.

Sawmills located in the canyon valleys of the Black Range supply the needed lumber for buildings and use in mines, and an ample supply is kept on hand in the lumber yards of the different towns at an average price of 3 cents per foot. Heavy mining timbers for supports are delivered at the mines for from 4 to 8 cents per running foot, according to locality and proximity to timber. Fuel wood is delivered in the towns at $4 per cord. The use of coal is increasing, and with the extension of the railroad to Hillsboro will become the universal fuel for all manufacturing purposes.

MERCANTILE SUPPLIES.

In the principal towns of Hillsboro and Kingston very large stocks of merchandise are carried, and prices will compare favorably with any other known mining districts. Smaller but complete stocks are also carried in the lesser towns of Chloride and Lake Valley, and some convenient stores are to be found where towns have not yet sprung up, but where there is mining, and supplies are needed. The Sierra County Bank at Hillsboro and the Percha Bank at Kingston supply the needed facilities of financial exchange and accommodation.

MILLS AND SMELTERS.

The building of ore-reduction works has kept pace with the production of the mines. Amalgamation and concentration works both are now crowded to their utmost capacity, and an enlargement in this direction must soon be made. Two smelters, or rather matte furnaces, have been erected and operated during the past year, and in this field a large expansion is probable and expected. Water supply for mills has been obtained during the dryest seasons known in the history of New Mexico, and by the aid of some engineering the available supply can be greatly increased.

HILLSBORO.

Hillsboro at the center of the gold district is still the leading town of the county of Sierra. The mines maintain a regular output, and several new ones have been brought into prominence during the past year. Principal among those may be mentioned the Trippe mine owned by a Pennsylvania company. Three shafts have been sunk on this mine, and levels opened to a depth of 300 feet. A mill has been built and is in constant operation, handling 20 tons of ore per day, and turning out bullion and concentrates to the value of $10,000 per month. The mine is also shipping to the smelters a nearly equal value of first-class ore, from $60 to $100 in value per ton. Near the mill and around the post-office store a little town is springing up called Andrews, after Senator Andrews, the president of the company. Of the older mines the Richmond, the Wicks, and the Snake group maintain this position and keep in employment from 100 to 150 men. Other mines are being worked under lease or by their owners, but in the aggregate contributing considerably to the total output of the camp. The building of ore-reduction works and the introduction of improved machinery have kept pace with the production of the mines. Amalgamation and concentration works are now crowded to their utmost capacity, and an enlargement in this direction must soon be

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made. About $500,000 is the estimated output of this camp for 1899. The Hillsboro ores carry from 3 to 20 per cent of copper, and the great rise of this metal is almost as much to the miners as the rise in beef values has been to the cattlemen. From 60 cents per unit in 1895 to the present $2.85 is a big jump, but it is founded on true scarcity and demand, and therefore likely to be well maintained.

Among the silver camps now recovering from the long depression and again getting to work at mining for what there is in it, Hermoso has been making some great records of happy results and strikes by leasers and small owners. A pocket of ore in that district means thousands of dollars to the finder. The most remarkable thing in silver this year, however, has been at the Lookout mine on Trujillo Creek, the last carload of ore netting the lessees and owners $11,000. With three chutes of this ore opened and actively working, this mine is likely to make a big sensation before long.

Other mines in this county are also producing very rich ore, and there is a general feeling of renewed confidence in silver mining. At the old and once famous camp of Kingston there is also a noticeable revival of mining and increase of production. A new reduction mill built there by a Detroit company is successfully handling large quantities of low-grade ore, and the product is a great addition to the resources of the camp.

Lake Valley is also waking up and doing some mining for rich ore, and for the valuable fluxing ores peculiar to that camp. In the Caballo Mountains copper has been found in paying quantities and under circumstances that indicate permanence. Several good miners are in the district, and much may be expected from this source. Altogether the people of Sierra County are well and profitably occupied, and are as self-supporting and independent a community as can be found anywhere.

Colonies of from ten to twenty families with small capital, say from $1,000 to $2,000 each, could make excellent locations in this county. The land is cheap and the titles are good, and there is a great demand at all times for agricultural products.

Sierra County enjoys the distinction of being out of debt. Its warrants are maintained at par, its resources varied, its people energetic and hopeful, and its outlook for the future bright. It is situated in the south central part of the Territory. Its area is about 2,376 square miles. The county lies principally in the Rio Grande watershed, which river traverses its entire length, taking up in its course hundreds of lesser bodies of water, which will serve as an important factor in making agriculture and horticulture the leading industries of this section.

WARM SPRINGS.

The warm springs, in the valley between Hillsboro and the mines, are provided with a commodious bath house, swimming and private baths, and are a great source of health and pleasure to the miners, who attend in great numbers at least once a week. The water is just comfortably warm, and the baths are in constant use the year round.

At Las Palomas, on the Rio Grande, and at Ojo Caliente, north of Grafton, are extensive hot springs and noted health resorts.

HON. W. H. ANDREWS'S PROPERTY.

The most extensive mining property in the Hillsboro district is that operated by Hon. W. H. Andrews, of Pittsburg, Pa., under the name

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THE CORRAL AND ONE OF THE LARGE ORE WAGONS; ALSO SHOWING SENATOR ANDREWS ON HORSEBACK.

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A Bird's-eye View of Mill and Buildings, Senator Andrews's Mine.

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of the Philadelphia Mining and Milling Company. Senator Andrews entered the field of mining in New Mexico in 1897. He purchased and bonded a large number of claims in the Hillsboro district, and after thoroughly prospecting each one selected those best adapted to his purpose and relinquished the balance. Those retained were the El Oro, Golden Rule, Golden Courier, Bona, Little Stanley, Mignon, Corona, Satisfaction, Trippe, Hillsboro, and Homestake.

After the selection had been made preparations were immediately begun for the construction of a mill. To determine what process was best adapted, several tons of ore were shipped to Denver, Colo., and a thorough test of the various processes for the extraction of gold was made, and the Peletin-Clerici cyanide process was accepted. A plant capable of handling 50 tons per day was constructed on the El Oro claim. The process was eminently satisfactory at first, but the character of the ore changed, and it was found necessary on this account to discard the cyanide process entirely and replace it by ordinary amalgamation and concentration, the Wifely concentrating table being used for the latter operation. The difficulty with the cyanide process lay in the fact that the ore handled was very heavy in iron. After it was crushed to 60 mesh and delivered to the cyanide tanks it was there agitated for a period of about nine hours, the coarse gold settling of its own weight, the fine gold being dissolved and precipitated on quicksilver (which covered a copper plate) by electricity. The agitation acted as a concentrator, and the iron settled over the quicksilver to a depth of several inches, thus preventing a greater extraction than from 45 to 52 per cent, while by amalgamation and concentration an extraction of from 80 to 92 per cent is secured.

Operations have been confined mostly to the Trippe mine. The work on this claim consists of three shafts, which have been sunk to a depth of 300, 120, and 50 feet, respectively. From the 300-foot shaft levels have been run at 50, 150, and 250 feet. From the 120-foot shaft a level has been run to connect with the 150-foot level from the 300-foot shaft, thus insuring an abundant supply of air. In all these openings ore is to be found. What is known as the low-grade ore—that running below $40—is run through the mill and concentrated, the concentrates being shipped to the smelter. Of this character of ore there is a large body, varying in width from 1 to 3 feet. The high-grade ore—that running over $40—is stacked and shipped direct to the smelter. This ore, varying in width from 6 to 18 inches, is found on all the levels. The richest body of ore is found in the 250-foot level. In width it varies from 14 to 18 inches, and is found for a distance of 100 feet (at which time this report is made), and assays $1,630 per ton. Every indication points to the continuation of this body of ore, and should it continue it will make the Trippe the largest gold producer in New Mexico. The ore is hoisted from this mine by a Fairbanks & Morse gasoline hoist on the 300-foot shaft and whims on the other two. These whims will be replaced by gasoline hoists in the near future.

Situated on the El Oro are the company's buildings, which consist of a hotel, store, corral capable of stabling 30 head of horses, the senator's private residence, and the bunk house. The latter has just been completed, and is unique in its arrangements. Every employee is supplied with an iron bedstead, mattress, and pillow. There are reading and toilet rooms, the former supplied with the latest periodicals and newspapers, and the latter with towels, soap, etc. Each occupant is assessed 10 cents per week, which defrays the expenses of

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the janitor and subscriptions to the magazines and newspapers. All the buildings are substantial and comfortable.

The improvements under way and contemplated are a schoolhouse, which may be used on Sundays for religious services, an electric plant, capable of furnishing power for 400 16-candlepower incandescent lights and 10 arc lights, and the enlargement of the corral.

John I. Thomson is general manager for the company and Peter Townsend the mine foreman.

SOCORRO COUNTY.

Socorro County is situated in the central portion of New Mexico, between the thirty-third and thirty-fifth parallels; is bounded on the north by Valencia County; on the south by the counties of Grant, Sierra, Otero, and Donna Ana; on the east by the counties of Lincoln and Otero, and on the west by the Territory of Arizona.

This is at present the largest county in New Mexico, containing approximately 10,000,000 acres of land, consisting of agricultural, grazing, mineral, coal, timber, and saline lands.

Under the present facilities for irrigation about 1,000,000 acres are available for agricultural purposes. Vast areas of excellent land for agricultural purposes are found on the east of the Rio Grande, extending from the eastern slope of the Serros del Pueblito, San Pedro, and Fra Cristoval mountains to the western slope of the Oscura, Burro, and San Andres mountains, covering an area of from 15 to 25 miles in width and 40 to 50 miles in length, the greater part of which might be reclaimed by means of a system of reservoirs for the storage of water. Equally large areas of as fine land as the sun ever shone on is found west of the Magdalena Mountains, in the valley situated between the Datil Mountains on the north and the San Mateo Mountains on the south, a large portion of which might also be reclaimed by means of storage reservoirs.

Estimated population, 19,000, of which approximately two-thirds are native born.

The following are a few of the principal points of importance in the county, to wit: Socorro, San Marcial, Magdalena, San Antonio, Kelly, Mogollon, Cooney, Graham, Alma, Frisco, Gila, Mangus, Luna, Sabinal, Lemitar, San Acacia, Polvadera, La Joya, and Paraje, of which Socorro, commonly known as the "Gem City," is the county seat and headquarters for the fifth judicial district, comprising the counties of Socorro, Lincoln, Chaves, and Eddy. Socorro has a population of 3,000 inhabitants, and is beautifully situated on a slight elevation or tablelands immediately adjacent to the Rio Grande Valley about 2 miles west of the river, at the base of the Socorro Mountains. The city owns and controls its own waterworks, the supply of which is acquired from the Socorro Mountain springs, about a mile above the city, and at an elevation sufficient to furnish any pressure that may be required for any and all purposes. Analysis of the water demonstrates the fact that the same is chemically pure. Principal resources are farming, fruit raising, mining, manufacture of brick, cattle and sheep raising. Climate excellent; is the headquarters for the furnishing of supplies to a large area of country tributary thereto. (The Socorro brickworks have the reputation of producing the best quality of building and fire brick in the West.) Socorro has two banks, three flourishing flouring mills, two weekly newspapers.

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THE INTERIOR OF BUNK HOUSE, SENATOR ANDREWS'S MINE.

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SAN MARCIAL.

San Marcial is also situated in the Rio Grande Valley, about 28 miles south of Socorro, and is a stirring, enterprising, up-to-date town of 1,500 inhabitants; division point of the Atchison, Topeka and Santa Fe Railway Company, and where the railway company repair shops and roundhouses are located; also a hotel; is headquarters for the furnishing of supplies to an extensive area of country tributary thereto, including the neighboring towns of Val Verde, Contadero, Old San Marcial, Cantarecio, Paraje, and Rosedale mining district. A modern flouring mill, owned by J. N. Broyles, is in operation day and night; one weekly newspaper, one bank. Principal resources are cattle, sheep, mining, fruit raising, and farming.

MAGDALENA.

Situated about 27 miles from Socorro is Magdalena, which is the terminal of the Magdalena Branch, operated by the Atchison, Topeka and Santa Fe Railway Company, and is one of the principal points in the county for the shipment of cattle and sheep, shipments of cattle for the year ending August 25, 1899, amounting to 24,387 head. Has a population of about 700 inhabitants. Principal resources are mining, smelting of ores, cattle, and sheep. Is headquarters for the furnishing of supplies to towns and ranches tributary thereto for a distance of 300 miles, including Springerville, Ariz. A 100-ton smelter, owned and managed by Capt. A. B. Fitch, is in operation day and night, and from the product of which has been shipped during the year ending August 25, 1899, 1,225,152 pounds of bullion. Amount of ore shipped during the same period, 1,020,000 pounds. At the present time new and important discoveries have been made in the Magdalena mining district, which will very materially increase the product from this place.

SAN ANTONIO.

San Antonio is situated 10 miles south of Socorro, in the Rio Grande Valley, along the main line of the Atchison, Topeka and Santa Fe Railway; has a population of 1,000 inhabitants within a radius of 2 miles; has three large general merchandise stores. Occupation and principal resources are farming, fruit raising, freighting, coal mining, cattle and sheep.

Eight miles east of San Antonio are situated the Carthage coal fields, owned and operated by Hilton & Co., of San Antonio. The coal vein is 5 feet thick, and of a superior quality for steam and coking purposes. It is hauled by means of wagon transportation to the railroad at San Antonio for shipment. This place is also the headquarters for furnishing and forwarding supplies to towns and ranches east of the Rio Grande, including the town of Whiteoaks. The valley lands are very fertile and considered as good as any in the valley, a portion of which from experiments have been found to be especially adapted to the culture of canaigre root and sugar beet. The Bosque del Apache grant is situated 3 miles south of San Antonio, and contains something over 12,000 acres of choice valley land, which at present is not under cultivation, but would furnish an excellent opportunity for capital desiring to engage in the culture of sugar beet and the refining of sugar. Similar opportunities

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can be found at various places along the Rio Grande Valley; in fact, choice lands suitable for the culture of sugar beet can be found adjacent to any of the above-named towns in the valley. Water supply for irrigation purposes is derived from the Rio Grande through the medium of community irrigation ditches.

MOGOLLON.

This is one of the oldest mining camps in the county, having been discovered in 1879. Has several producing and dividend-paying mines. Population about 750.

FRISCO.

Frisco is situated in the western portion of the county, on the Frisco River. Principle resources are farming and stock raising. Population about 500.

MINES AND MINING DISTRICTS.

The following are a few of the principal mines and mining districts in the county: Cooney district, a portion of the Black Range district, Dry Creek district, Sullivan's Hole district, Cat Mountain district, White Water district, Iron Mountain district, Magdalena district, Socorro mining district, Lemitar district, Kelly mining district, Rosedale mining district, Water Canyon mining district, Ladrones mining district, La Joya mining district, Oscura mining district, Hansonburg mining district, Burro mining district, San Andres mining district.

In the Cooney district are located and in operation several mines, stamp mills, etc., the Cooney mine or Silver Bar having a production of several hundred thousand dollars. Character of ore: Gold, silver, and copper, a portion of which is saved on the plates and the balance by concentration. The Queen, owned by a Galveston company, has considerable development and also a modern 10-stamp mill, amalgamation process.

The Florida group, owned by W. J. Weatherby, has several hundred feet of development; a gold free-milling proposition; pay-ore streak ranging from 18 inches to 3 feet in width; values, $20 and upward. A splendid opportunity for the investment of capital.

The Little Fannie mine, situated about one-half mile from the town of Mogollon, has produced thousands of dollars; is considered one of the best paying mines in the district; has attained a depth of something over 300 feet. Character of ore, milling. Values saved by amalgamation. Pay ore from 5 to 20 feet thick; values, $15 to $40, saving about 75 per cent.

Maud S, situated in the town of Mogollon, has produced $675,000; has a 10-stamp mill. Attained a depth of 375 feet below creek level. Pay-ore streak, 18 inches to 3 feet. Values saved by amalgamation and milling process.

Eberle mine, situated in Mogollon, is one of the best propositions in the camp, has several hundred feet of development, and is reported to have sufficient ore in sight to run a 50-stamp mill for a term of five years. The property has been in litigation for several years, during which time the owner has been constantly developing with a view to erect necessary machinery thereon for the reduction of ores, which will probably be executed in the near future.

Last Chance mine, situated in the Last Chance gulch, one-half mile from the town of Mogollon, has produced $160,000, has a 15-stamp

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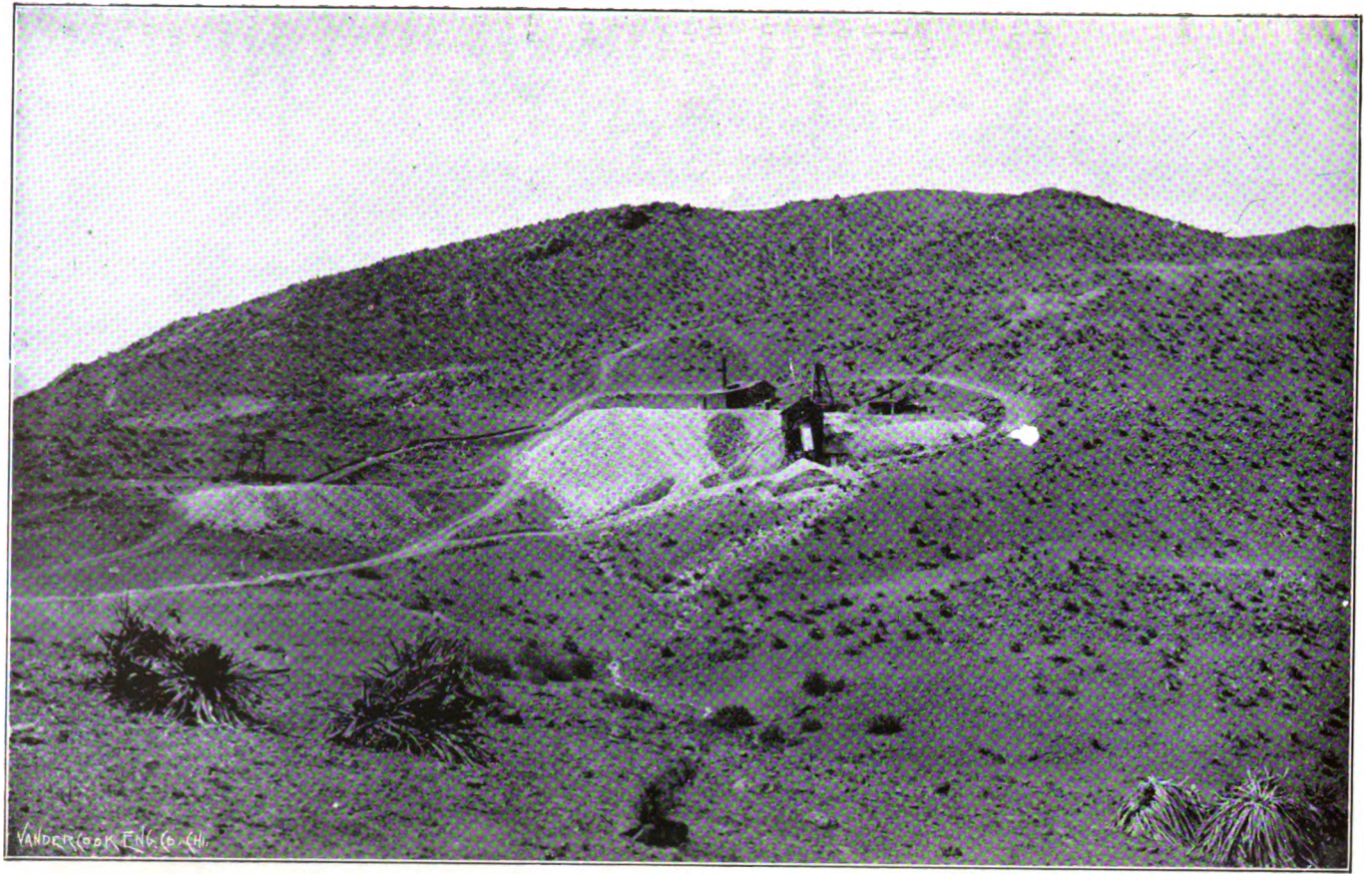

GOLD MINE, SIERRA COUNTY.

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mill, and was recently sold to English capitalists. Is working day and night and reported to bid fairly well toward becoming one of the heaviest producers in the camp. The vein is immense, varying in width from 10 to 30 feet; average value about $10, some of the ore running up into the hundreds.

Deep Down mine, situated on opposite side of the canyon to the Maud S, on the same lead, has a 5-stamp mill, has produced $65,000, and has a bright future.

The Confidence mine, one of the largest and most fully developed properties of the camp, has an estimated output of something over $1,000,000; has a 30-stamp mill run by water power; has attained a depth of over 700 feet. The mill is situated on White Water.

Black Range district. About one-half of this district is situated in Socorro County, the balance in Sierra County. The ores of the Black Range district are high grade, as has been fully demonstrated in the past by shipments heretofore made. A ton sample shipped from the Iffie group gave returns of $211, of which $180 was in gold. An average of 10 samples from the same property, taken by a conservative mining expert, gave returns showing average values of 6⅔ ounces gold and 90 ounces silver.

The Great Republic group is also situated in this district, and upon careful examination demonstrates the fact that it is capable of becoming one of the heavy producers of this region.

The Ivanhoe has also produced some very rich ore.

The Silver Monument, at the head of Chloride Creek, has a production record of something over $100,000. South of Chloride Creek is the United States Treasury mine, showing an ore body of 20 feet at the 100-foot level, averaging $10 per ton in gold.

South of Hagan's Peak are the Colossal and Midnight, the former having produced $70,000. Another one of the heavy producers is the Readjuster, a copper and gold proposition, owned and controlled by Gen. Quinby Vance. Immense deposits of iron ore, from 50 to 500 feet in width and running from 58 to 65 per cent iron, are found in different portions of the district, and many other properties equally meritorious. This district will some day in the near future be the Cripple Creek of New Mexico, the possibilities of which are far greater than the expectations of even the most sanguine friends of the district.

Dry Creek district is situated in western Socorro County, about 15 miles from the town of Mogollon. Rich copper and lead ores have been found in the district, one of the promising prospects being owned by Dan Bechtol; also "tellurium ores," running up into the thousands. The district is in need of development. There is an abundance of running water. There are also some very promising gold prospects owned and controlled by Mr. Bachellor and associates, of Graham, N. Mex. With development the district has a promising future in store.

Sullivan's Hole district is situated in the San Mateo range, and some very promising gold claims have been located and some mining done. The district, however, is in need of development and would furnish a good field for prospectors and capital. Nearest railroad station is Magdalena.

Cat Mountain district is situated about 10 miles from Magdalena, and is systematically one of the largest free-milling gold propositions in New Mexico. The property is equipped with a steam-hoisting plant, and shows 25,000 tons of ore in sight that will mill $10 per ton above the 100-foot level. Below the 100-foot level the ore body is increasing

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in size and value as depth is attained. There are other promising prospects that might do equally as well with development.

Rosedale mining district is situated about 40 miles west of San Marcial in the San Mateo Mountains. The character of the ore is gold. One of the principal producers is the property operated by the Martin Company, which has paid handsome dividends to the stockholders for some time and is daily becoming more valuable with development. Another promising property is a gold proposition owned and operated by the Hanna Bros. & Bell, of San Marcial. Values in this district seem to increase with depth. The ore is mostly free milling, the tailings being saved by concentration, or might be treated with cyanide.

Iron Mountain district is situated 6 to 10 miles north of Cat Mountain. Nearest railroad station is Magdalena. This district is undeveloped. Has several promising prospects, showing values in gold, silver, and lead.

Magdalena district is situated adjacent to Magdalena. Gold, silver, and lead properties have been successfully worked for several years. Lead carbonates are found in many of the mines in paying quantities. North end of the district is principally gold.

Kelly mining district is situated immediately south of and adjoining the Magdalena district. In the district is situated the town of Kelly, a prosperous mining town. Nearest railroad station is Magdalena, only 3 miles distant. The Kelly district is one of the oldest in the county, and has probably produced more values than any other district in the county. The ores are principally lead carbonates and galena; there are also one or two promising copper properties. One of the principal copper propositions is operated and owned by Walter Cook. The "Graphic" mine is situated in this district, and has been producing ore and paying dividends for the past fifteen years. The property is now being operated under the efficient management of Capt. A. B. Fitch, and is reliably reported as doing better than at any time in its history. Captain Fitch is also operating, in connection with the mine, a hundred smelter. Perhaps the most forcible testimony as to the worth of this property is the fact that during the cloudy days of 1894 and 1895, when lead sold as low as $2.40, the smelter and mine hardly ever lost a shift. The lead carbonates carry some gold and silver, averaging from $2 to $10 per ton.

The "Kelly" mine is situated south of the "Graphic" and has produced thousands of dollars. The mine is at present operated under a lease and ore is being steadily shipped.

"The Juanita" is another good lead property, but is not being worked at the present time on account of being in litigation, is a splendid property, and will be one of the heavy producers as soon as the litigation is settled.

East of Kelly is found the "Hard Scrabble," which has a good production record. South of Kelly are found the "Mary" group, also the "Imperial;" next the "Young America," the last named having shipped considerable ore, the values being found in carbonates running from 30 to 60 per cent lead, and also some silver and gold.

Adjoining the "Graphic" is found a promising lead prospect owned by C. C. Clark, of Kelly. In the immediate vicinity is also found the "Ambrosia," "Yellow Rose of Texas," operated or owned by A. D. Coon, of Socorro, and numerous other prospects which would no doubt be equally meritorious with necessary development.

The Water Canyon mining district is still in its infancy, although prospecting has been carried on for some time. Ores: Gold, silver, lead,

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and copper. One of the principal properties is the Timber Peak, situated near Six Mile. The same is being operated under the direction of Richard Sanders, of Philadelphia. This is an enormous vein, in fact, a mountain, of low-grade gold ore. Values saved by concentration. The company have recently erected a large mill at an approximate cost of $50,000 for the purpose of reducing the ores. Values are found in iron sulphides. In Water Canyon, about 4 miles from the Timber Peak, is found the "Buckeye," operated by the Buckeye Gold and Copper Company, nearly all of the stockholders of which are residents of the Territory. The values are principally gold and copper. The ores are sulphides and oxides of copper. In this property water level was encountered 125 feet below the surface. The values of the ore are very materially increasing with depth, the character also changing at water level from a decomposed, honey-combed quartz to a copper sulphide, the ore shute from which shipments are being made so far as uncovered ranging from 2 to 5 feet in thickness. This property has also an immense vein of low-grade ore that would pay to treat on the ground. Formation: Lime and porphyry, hanging-wall lime, foot-wall quartzite. The property is equipped with up-to-date steam hoists, mine pumps, etc., and under the efficient management of the president of the company, Mr. C. T. Brown, and Lee Terry, mine foreman, the property is expected to become in the near future one of the heavy producers of the district.

In Copper Canyon, a few miles distant, is found the Driscoll property. This is a gold proposition and one of the most promising in the district. It has an immense contact vein of low-grade milling ore. Negotiations are in progress with Eastern capitalists for the purchase of the property. This proposition certainly affords an encouraging field for capital seeking investment. There is an abundance of water and an ideal mill site. The property is owned by Dr. Driscoll, of Socorro.

Beyond Dark Canyon in the same district are found a number of paying lead properties, one of the principal mines being owned and operated by Col. W. S. Williams, of Socorro. This mine is known as the "Bell," and at the present time is making regular shipments. The ore is galena, running from 30 to 65 per cent; also carries from $2 to $20 in silver and gold. In the same canyon and district adjacent to the Bell is found another valuable lead property, owned by Mr. Mitchell. The property is being worked under a bond and lease, and has been shipping continually during the past three months; character of ore the same as the Bell. There are numerous other valuable and encouraging prospects that with development will prove to be steady producers. The Water Canyon district is situated 15 miles southwest of Socorro, and is considered by mining men to be one of the best fields for investment in the Territory. As above stated, the district is in its infancy, but all developments so far made have been very satisfactory. The veins seem to be permanent and values universally increase with depth. Abundance of water and timber for mining purposes.

Socorro mining district is situated immediately west and adjacent to Socorro. Character of ore: Gold and silver. This district is also one of the old districts in the county, and has a production record exceeding $1,000,000. The "Torrence," a silver proposition, is not being worked at present, and has large bodies of low-grade silver ore; principal values, silver. Next to the "Torrence" is the "Merritt," owned by a corporation, the principal stockholder of which is A.

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Coon, of Socorro. This property has an immense body of milling ore (silver) that will average under the present price of silver about $9 per ton. Farther up the mountain is the "Glasson property," a gold proposition, from which some very rich ore has been extracted. This property is considered by mining men to be a very promising proposition. It is owned and worked by Mr. Glasson, of Socorro.

Lemitar district is undeveloped. Ores are copper and lead. Some very good lead carbonate ores have been discovered lately, and considerable work is being done at present. This district is situated about 10 miles north of Socorro.

Ladrones is situated in the Ladrone Mountains, about 25 miles northwest of Socorro. Ore is copper and some silver. The district is undeveloped, but some good copper prospects have been discovered.

Lajoya is comparatively a new district, but active and scientific mining has been going on under the direction of Lon Jenkins, E. A. Levy, and associates during the past year and a half, with very encouraging results. Ores: Gold, lead, and copper. A number of shipments have been made which have paid for developments. The ore is a high grade, and will bear transportation and smelter charges and still leave a profit to the owners. Nearest post-office, Lajoya, N. Mex. The mines are situated on the east side of the Rio Grande, about 5 miles southeast of Lajoya and 2 or 3 miles from the Atchison, Topeka and Santa Fe Railway.

Oscura mining district is situated about 45 miles east of the Rio Grande and the same distance from the railroad. Ores: Copper and lead. Some prospecting has been done and large quantities of low-grade ore have been discovered, but will not stand transportation to the railroad.

Hansonberg district shows copper and some gold and silver. Considerable development has been done in this district, and some very promising copper properties have been partially developed, the principal one of which is owned by A. Hogwall, of San Antonio, N. Mex., and C. Blanchard, of Las Vegas. The ore is very high grade and shipments have been made showing satisfactory returns. Distance from mine to railroad about 35 miles; nearest post-office, San Antonio.

Burro mining district is situated about 50 or 60 miles from the railroad, on the east side of the Rio Grande. Ores principally copper. Some development has been made and very good quality of ore taken out. The greatest drawback is the scarcity of water. It is probable, however, that water might be acquired by boring wells.

San Andres mining district is situated about 30 miles east of Lava Station. Ore: Copper. Considerable work has been done in this district, and at present copper ores are being shipped to El Paso smelter. The veins are good size, and ore running from 13 to 20 per cent is found in paying quantities. Some of the principal properties are owned by Mr. A. T. Harrison, the same being now operated under bond and lease. This is considered one of the richest copper districts in the county.

TIMBER.

The principal timber in the county is situated west of the Rio Grande. Good heavy pine timber is found in various places in the several mountain ranges. The Flagstaff (Ariz.), timber belt extends through western Socorro County. In the Mogollon range perhaps is found the best and largest timber belt in the county, covering an area 5 to 20 miles in width and 20 to 30 miles in length. We find

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another belt of the same timber in the Friscos—Elk Mountains, Black Range, and San Mateo ranges—suitable for commercial and building purposes; also in the Magdalena and Gallina ranges, but not so large or of as good quality as some of the aforesaid ranges. One million acres would probably be a conservative estimate of the area of land covered with heavy pine timber suitable for sawmill and commercial purposes in the county. Very little cutting has been done, except the limited quantities used for mining purposes, erection of reduction works, etc., most of the timber being located a considerable distance from the railroad, and will not stand wagon transportation.

COAL.

Coal is found in the western portion of the county, which is supposed to be the Gallup coal belt. On account of no railroad facilities the coal is not being worked. The veins are from 6 to 7 feet thick. Coal is also found within 15 miles of the Magdalena. The Carthage coal fields are situated east of the Rio Grande, mention of which has been made heretofore.

SALINE LANDS.

Near the western border of the county are situated some salt lakes with an inexhaustible supply of a very good quality of salt, the product of which is being used by the mills at Mogollons, Graham, and Cooney. Some salt is also peddled around and used for domestic purposes. There are also some salt beds near the San Andres mountains, but not as good quality as the first-mentioned salt. Distance from railroad about 175 miles.

VALUATION.

According to tax rolls, which generally show about one-third the actual valuation, the property of the county is valued at $4,700,000; the bonded indebtedness approximately is $175,000.

CATTLE AND SHEEP.

The estimated number of sheep in the county is 200,000; number of cattle, 100,000 head; also several thousand head of horses.

RAILROADS.

The Atchison, Topeka and Santa Fe Railway Company owns and operates 107.76 miles of main-line track and 19.11 miles of side track; also division point and repair shop, round houses, etc., at San Marcial.

The county, generally speaking, is in a prosperous condition, caused by the rise in values of the products of the county, especially in cattle, sheep, wool, lead, and copper, etc.

THE SOCORRO FIRE-CLAY COMPANY.

The Socorro Fire-Clay Company is one of the best known corporations in the Territory and stands in the first rank of New Mexico industries. It has been gradually increased in capacity and improved in the quality of the articles manufactured, until it stands now as the best, if not the largest, fire-clay works in the Southwest. When running full capacity it gives employment to 35 men and ships 150,000 brick per month. It has two late-improved brick kilns with a down draft, having a capacity of 50,000 and 60,000 brick, respectively.

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The fire-clay brick for smelter furnaces is made by hand into all shapes and sizes and of two different grades. They are really fine, and are growing in popularity with the different smelters throughout the country. Their building brick is made in three colors, buff, white, and red, and has been used extensively in the building up of Albuquerque and El Paso.

A very careful analysis of the clays surrounding Socorro has been made, and no less than 350 different kinds, suitable for making brick, pottery, tiling, sewer pipes, crucibles, scorifiers, mufflers, and almost everything requiring a fine grade of fire or brick clay.

This growing and important institution, like many others in the Territory, has succeeded only by good management and strict attention to business, and its success is now established beyond all doubt.

TAOS COUNTY.

The agricultural, mineral, and other resources of Taos County are of such a diversified character it will be impossible for me to give more than a brief outline of their nature and importance in the space assigned me.

Taos County might aptly be termed a paradox in civilization. It is the oldest and newest portion of the United States. Here, according to the traditions of our Pueblo Indians, were homes and farms five hundred years ago. Before Columbus discovered this country a portion of the Taos Valley was under cultivation, and before the *Mayflower* anchored off Plymouth Rock houses of adobe were clustered about the mouth of the Pueblo Canyon that sheltered the forefathers of some of the present residents of the Taos Valley. The houses of that period were replaced by the present "Pyramids of Taos," which, unlike those of Egypt, were built for homes for the living and not for the dead. The Pueblo Indians, without doubt, were the first home builders and farmers in America that still exist to emphasize the claim of their fathers to that distinction. Notwithstanding the fact that this is the oldest farming community in the United States, there are thousands of acres in this valley of as fine land as the sun ever shone on, that no doubt has the same growth of sage brush that covered it when the Pilgram Fathers landed on this continent. In many places the primitive methods prevail in the planting and harvesting that were common a thousand years ago, notably the wooden plow, the sickle, and the thrashing floor; yet, with all that, the most beautiful crops are the rule.

The mineral resources furnish a parallel to those of agriculture. The first authentic record of the production of gold, in what is now the territory of the United States, was the production of gold from the placers in the Taos Valley, nearly two hundred years ago, when this country was dominated by the Spanish. The records of large shipments of gold to the City of Mexico are in existence to-day, and the ore-placer washings, extending for miles along the Rio Lucero, may be seen to-day. Ruins of Old Arastas that were used, perhaps, centuries ago for the extraction of the precious metals can be found to-day in the mountains; yet, without doubt, Taos County has more square miles of mineral territory that remains untouched by the prospector's pick than any county in the great mineral belt of the West. Surely it is a paradox. Progress in agriculture is noted during the past year. Improved machinery and improved methods are being introduced by the more progressive farmers. The reaper is

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taking the place of the sickle, and handsome carriages by the score are to be seen where the cart and wagon were in use before.

Notwithstanding the excessive drought this season, many fields of wheat will average 40 bushels to the acre, and there is the greatest abundance of agricultural products.

No finer fruit is grown anywhere than here in the Taos Valley. The orchards have come to stay, as failures of a fruit crop are rare indeed, and in some localities entirely unknown.

The greatest difficulty that the farmer in the Taos Valley has to encounter is the market for his surplus. Before the advent of railroads in the western country this valley was the granary of the southwest, and a portion of Old Mexico drew its supplies from here, but in recent years he has been compelled to depend upon a local market that was limited, and this curtailed production. However, the local market is being stimulated by the development of the mines in the adjacent mountain ranges, and another ray of hope from the prospects of a railroad in the near future is stirring the energies of the farmer. A railroad that will furnish a southern outlet, thus reaching the legitimate market for the flour and grain, will make this valley second to none in point of productiveness. The money for this enterprise is already assured, if the details of connection and right of way can be satisfactorily arranged. It is sincerely hoped that before the end of the next year the whistle of the locomotive will be heard in this valley and a new era of prosperity will have begun. With the coming of a railroad, new industries will be developed; this valley will become the feeding ground of northern New Mexico. The thousands of sheep and cattle now shipped to Colorado feeding points will be fattened here. The modern flouring mills will take the place of the old water mills, and reduction works will utilize the great veins of low-grade ores that are now practically valueless on account of the lack of transportation.

MINING INDUSTRY.

Considering the lack of capital, rapid strides are being made in the development of the mineral resources of this county. During the present season one new mill has been placed in operation, one is nearing completion, and the third is contracted for. These will have a combined capacity of over 100 tons of ore daily. In addition to that there are three new shipping mines which have been opened, and more would be listed as producers if capital would furnish local treatment for the ores. Millions of tons of low-grade ores are already exposed by recent development work and scores of low-grade veins remain to be opened. What a magnificent field for genius and capital. Genius to devise and capital to construct the plants for the profitable extraction of the precious metals from nature's treasure vaults in the Taos Mountains. However, capital is no longer ignorant of our great mineral resources, as more Eastern money has been invested in the mines of this county during the past year than in all previous history, but the field is practically unlimited, as this county contains over 900 square miles of known mineral territory. It has the advantage of good roads, timber, and water, and is lacking only in transportation. With the present rate of development Taos County in the near future will be second to none in the production of precious metals. This valley with its 300 square miles of the finest agricultural and fruit land, at an altitude of 7,000 feet, protected on three sides by high mountain ranges, and watered by seven rivers, with a climate that is

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unsurpassed, is destined to become the home of 100,000 people. Nature has given it the soil, the sunshine, the scenery, the pure air, and sparkling water; it remains but for man to improve, beautify, and adorn nature's work for this valley to become what the Indian legend claimed for it in the past, "The Paradise of America."

UNION COUNTY.

The most northeastern county of the Territory is Union, which was created in 1893. It is 123 miles long by 55 miles wide from east to west. It is mostly prairie land, but in the northern portion is a branch of the Raton Mountains. The land is chiefly used for grazing purposes, but along the many streams considerable farming is done, the soil being well adapted to the raising of nearly all the small grains and vegetables.

ALTITUDE AND CLIMATE.

The altitude is about 5,000 feet, which is an excellent average for all persons having pulmonary trouble combined with a weak nervous system, since the climate in this county is equal to almost any portion of the Territory for all pulmonary affections. The air is dry and crisp, is neither too hot in summer nor too cold in winter even for the chronic invalid.

TOWNS AND VILLAGES.

Clayton, the county seat, is the largest town in the county, and is situated on the Colorado and Southern Railway (formerly known as the Union Pacific, Denver and Gulf), in the northern half of the county, and about 10 miles west of the Texas line. The population of this town is between 700 and 1,000. It has an excellent water system and electric light plant, modern court-house costing $20,000, and fine public school building costing its progressive taxpayers $10,000, also a modern hotel, costing $20,000 when finally completed. The school census of this town shows 350 children of school age.

Folsom is situated in the northwest portion of the county, on same line of railway, is the second railroad town of importance in the county, and contains nearly as many people as Clayton. Formerly the United States land office was located here, but was removed to Clayton. Folsom has an altitude of over 6,000 feet and nestles near the mountains, surrounded by springs whose waters contain valuable medicinal qualities, and this town is becoming quite a health resort for many people from Texas and other States who come here during the summer season. Folsom has a fine public school building, built at a cost of $7,000; two very good hotels, and many stores and business houses. Folsom, like Clayton, has a large trade from the surrounding country, extending as far as 150 miles.

Other towns having post-offices, but off of the lines of railroad, are Veda, Capulin, Gallegos, Baca, Genova, Tequesquite, Albert, and many others of minor importance.

CATTLE.

Union County has 60,000 head of cattle within its borders. Many, if not the large majority, are well-graded cattle of the Hereford, Jersey, shorthorn, and other fine breeds.

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SHEEP.

Three-quarters of a million sheep are now grazed in this county, many being Merinos and other well-known and valuable breeds. Scab is unknown among the sheep men here, and but few of these animals are lost here during the winter storms. The price of wool, sheep, and cattle having rapidly enhanced within a year, and these constituting the principal capital of the citizens of this county, the wealth of the county has kept the same pace.

SCHOOLS.

In all the school districts of the county the terms run from five to nine months, and every child within the confines of the county has the opportunity of acquiring at least a good common school education.

COAL.

Good coal is found in the northern part of the county, but owing to the nearness of other coal mines to the present railroad line no mines of coal have been developed, except such as the near-by settlers may do when removing coal for their immediate use.

HOMESTEAD LOCATIONS.

About two hundred homestead filings have been made at the Clayton land office during the past year, nearly all of which have been within this county, and while there is yet much valuable Government land here the indication is that the land containing living water will soon become individual property.

COST OF LIVING.

Exceptional inducements are offered the homeseeker in this county. Should he wish to engage in ranching, he may select his homestead from the thousand of acres of Government land at a cost of $16 for his 160 acres. He will find the expense of living not materially different from that in the East. Flour costs $2.80 per hundred; meats and grains are cheaper than they are in the far East, and groceries at prices charged in Denver or Kansas City, and in this climate of sunshine, after a few years, the summer heat of eastern districts, unknown in the arid portions of the West, and the rigors of severe winters of the Orient will hold out no inducement to him to leave the country of his adoption.

RAILROADS.

Union County is crossed by the Union Pacific, Denver and Gulf Railroad, a road running from Denver, Colo., to Fort Worth, Tex., a distance of 780 miles, which enters the county at a point near Folsom and leaves it at Texline, Tex. This road, which was built in 1888, has during the past five years improved greatly its roadbed and rolling stock until it has become one of the best roads in the West. Its passenger service is, because of its new and excellent coaches and fast-running trains, worthy of particular mention, and the traveler, leaving New Mexico one morning, reaches by close connections the city of Denver the same afternpon and Chicago the following evening. The road has, in way of improvements in Union County for the first six months of 1898, laid 10 miles of 65-pound steel in place of

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52-pound rails; has fenced 41 track miles, or 82 linear miles; has ballasted 25 miles of roadbed 15 inches deep with cinders, besides building sheep-dipping plants at both Folsom and Clayton with a capacity of 10,000 sheep daily.

A new and roomy station has also been erected at Clayton, equipped with electric lights. This road is a most patent medium in moving New Mexico cattle to northern ranges, and thousands of head are driven annually from the Pecos River district, in southern New Mexico, to Clayton and Folsom, where they are shipped to Wyoming, Montana, and Eastern markets. In the fall of the year no less than 200,000 sheep are also carried by the Denver and Gulf road to Colorado feeding points.

POPULATION.

The population of Union County is about 7,000, almost without an exception prosperous and enterprising. Never in the history of the county has there been an appeal for assistance because of poverty by the inhabitants, nor is a pauper within the confines of Union County.

Neat residences, well kept, impress the visitor at once with the prosperity of Union County in general.

VALENCIA COUNTY.

Valencia County is one of the largest and oldest counties in the Territory of New Mexico; it reaches from the Arizona line on the west to the line of Guadalupe County on the east, and has a total area of 5,621,760 acres. Of this area about 3,000,000 acres make good pasture land, 1,000,000 acres are irrigable and fit for agricultural purposes, and about 750,000 acres are good timber lands.

At the present time there are at least 25,000 acres under cultivation in the county, of which a very small proportion is cultivated without irrigation.

The population of Valencia County is about 15,000 inhabitants, almost without exception prosperous and enterprising. Never in the history of this county has there been a pauper within it, and for law and order it is not surpassed by any county in the Territory, there not being a single person in the county jail, nor has there been any for the past year.

The county seat is Los Lunas, situated on the Atchison, Topeka and Santa Fe Railroad, 21 miles south of Albuquerque. Belen may be mentioned as another of the principal towns of the county, in the Rio Grande Valley, it having all modern improvements, including a fine roller mill, elegant stores, schoolhouses, and churches.

Valencia County is traversed by both the Atchison, Topeka and Santa Fe Railroad and the Santa Fe Pacific Railroad, the former going down the Rio Grande Valley and the latter traversing the western portion of the county into Arizona.

SCHOOLS.

Valencia County compares favorably with every other county in the Territory as to its school facilities, and while it may not have as fine edifices as in more pretentious counties, the average length of the school term is eight months in the year, and there is hardly a school district but what has plenty of funds at its command.

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COAL AND MINERALS.

Coal has been found in several sections of the county, both east and west, and is of an excellent quality. In the western part of the county a good quality of onyx has been discovered. Large deposits of copper may be found in the eastern section, and gold and silver mines have been found in both the eastern and western sections of the county while in the Rio Puerco Valley there are some large beds of gypsum and a superior quality of building stone has also been found.

FARMING.

The largest amount of farming done in this county is confined to the valley of the Rio Grande, which river flows from north to south through the center of the county, although there are about 10,000 acres of land cultivated in the eastern and western portions. The soil of the Rio Grande Valley is extremely rich, and is being made better year by year by the application of river sediment which is brought onto the land by means of irrigation.

The principal products of this county are wheat, corn, oats, alfalfa, beans, and a large variety of fruits. Apples, peaches, and grapes grow to perfection in the lower valley. Grapes are grown in large quantities, and not only have we the justly celebrated Mission grape, but also several other varieties, as the Tokay, Sultana, Concord, Muscat, Gro Colmers, etc., which find a ready market at various eastern points.

The wheat grown near Los Lunas took the first prize at the World's Fair at Chicago over all competitors, and oats that were grown near Belen took the second prize, Russia taking the first.

Alfalfa crops bring good returns, and when properly handled produce from 1½ to 2 tons per acre at each cutting, and generally four cuttings are had each year, and ready sale, at good prices, is obtainable for all that can be produced.

On the western mesas of the county canaigre root is found in abundance, and as the demand for this root increases from year to year, for tanning purposes, an important industry will be developed in that line in the course of a few years.

Sugar beets have been planted in a small way in different parts of the county, and tests of them have given satisfactory results as to percentage of sugar, which is greater than that of a similar product grown in California, and careful estimates of which give indications of a yield of about 30 tons to the acre. As soon as a sugar factory can be established in the valley of the Rio Grande, a large portion of the farming land of the county may be devoted to beet raising.

STOCK.

In this county there are about 400,000 head of sheep, 25,000 head of cattle, and over 5,000 head of horses. The western as well as the eastern part of the county affords splendid pasture for stock whose owners, under the present prosperous conditions of the sheep and cattle business, are growing rapidly rich.

VALUATIONS.

The total assessed value of taxable property is $2,186,509.26; the debt, including all bonds issued, amounts to $106,982, and the rate of taxation is low.

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THE PRESS.

Of the 19 counties in New Mexico, newspapers are published in 16. Cities, towns, and villages in which papers are published number 31, of which 15 are county seats. Of the 56 papers published in New Mexico 5 are daily, 1 triweekly, 47 weekly, and 3 monthly.

Politically the papers are divided as follows: Republican, 20; Democratic, 18; religious, local, etc., 11; independent, 8. The papers, particularly the dailies, have large circulations and are influential in their respective communities.

Much of the development of the Territory is due to the energy and enterprise of the newspaper men, which has been a labor of love, for in New Mexico, like in many other States and Territories of our Union, the newspaper business is not, from a purely financial standpoint, a lucrative one.

Following is a list of the newspapers printed in New Mexico:

Alamogordo, Otero County:	
Alamogordo News	Republican.
Albuquerque, Bernalillo County:	
Abogado Cristiano Neo Mexicano (Spanish and English)	Methodist.
Bandera Americana (Spanish)	Republican.
Citizen	Republican.
Citizen (weekly)	Republican.
Morning Democrat	Democratic.
News	Independent Republican.
Nuevo Mundo (Spanish)	Independent.
Aztec, San Juan County:	
San Juan County Index	Independent.
Bland, Bernalillo County:	
The Herald (Weekly)	Independent.
Cerrillos, Santa Fe County:	
The Rustler	Local.
Chloride, Sierra County:	
Black Range	Republican.
Clayton, Union County:	
Enterprise	Republican.
Union Democrat (English and Spanish)	Democratic.
Deming, Grant County:	
Headlight	Democratic.
East Las Vegas, San Miguel County:	
Optic (daily)	Silver Democratic.
Optic (weekly)	Silver Democratic.
Voz de Pueblo (Spanish)	Independent.
Eddy, Eddy County:	
Current	Democratic.
Pecos Valley Argus	Independent Republican.
Elizabethtown, Colfax County:	
New Mexico Miner	Silver Democratic.
Farmington, San Juan County:	
San Juan Times	Democratic.
Folsom, Union County:	
Independent	Silver Republican.
Gallup, Bernalillo County:	
Gleaner	Independent Democrat.
Hillsboro, Sierra County:	
Sierra County Advocate	Democratic.
Labelle, Taos County:	
Cresset	Independent.
Lascruces, Donna Ana County:	
Donna Ana County Republican	Republican.
Independent Democrat	Democratic.
New Mexico Collegian (monthly)	Collegiate.
Rio Grande Republican	Republican.
Southwestern Farm and Orchard (monthly)	Agricultural.
El Tiempo (Spanish).	

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Las Vegas, San Miguel County:	
Independiente (Spanish)	Republican.
Optic (see East Las Vegas).	
Revista Católica (Spanish; edited by Jesuit fathers)	Catholic.
Stock Grower and Farmer	Stock and agriculture.
Lincoln, Lincoln County:	
News (English and Spanish)	Democratic.
Lordsburg, Grant County:	
Western Liberal	Republican.
Mora, Mora County:	
Anciano (Spanish)	Protestant.
Raton, Colfax County:	
Range	Republican.
Reporter	Democratic.
Red River, Taos County:	
Mining News	Independent.
Roswell, Chaves County:	
Record	Democratic.
Register	Independent.
San Marcial, Socorro County:	
Bee	Republican.
Santa Fe, Santa Fe County:	
Boletin Popular (Spanish)	
New Mexican (daily)	Republican.
New Mexican (weekly)	Republican.
Nuevo Mexicano (Spanish)	Republican.
Silver City, Grant County:	
Eagle	Democratic.
Enterprise	Republican.
Independent	Independent Democrat.
Socorro, Socorro County:	
Chieftain	Republican.
Industrial Advertiser	Democratic.
Springer, Colfax County:	
Colfax County Stockman	Democratic.
Tulerosa, Donna Ana County:	
Chief	Republican.
White Oaks, Lincoln County:	
Eagle	Democratic.

GAME AND FISH IN NEW MEXICO.

In the early days New Mexico was the paradise of the hunter and trapper. The earliest explorers of this Territory, and what is now the State of Colorado, in the first quarter of the present century, came here in the pursuit of their chosen calling of fishing, trapping, and hunting. The old trapper was a peculiar individual and many are the tales which are yet told by the oldest inhabitants of the adventures and experiences of Kit Carson, Bent, Williams, and their associates in the far West. The old Santa Fe trail for years to come will be an ever pleasant theme for song and story of those hardy explorers who were the precursors of the civilization which we now enjoy. The coming of the railroad and the great influx of settlers throughout the Rocky Mountain country deprived the old hunter and trapper of his means of sustenance and to-day he is but a memory.

In the early days, while yet the hostile Indians roamed the Great Plains, game of every kind was plenty. The buffalo, the deer, elk, bear, mountain lion, and all the smaller varieties of wild animals, were here on every hand. To-day the buffalo, like the old plainsman and hunter of the past, is only a tradition.

In the mountains, however, there are yet remaining deer, bear, mountain lion, and elk; turkey and grouse, beaver and big-horn sheep and mountain goats, as well as all the other smaller varieties of game

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which attract the sportsman and the hunter. All of this class of game is to be found in the mountains, from Colorado on the north to the great spurs and ranges extending to and covering the extreme southern portion of New Mexico and the northern part of the Republic of Mexico. In the highest mesas and near the peaks of our greatest mountains are found the sheep, goat, and elk. In every mountain range of consequence in the Territory may be found the black, cinnamon, and silver-tip bear, the latter a small variety of the grizzly, but entertaining enough upon occasion to satisfy the true sportsman's heart to a nicety. It may truthfully be said that deer are comparatively in plenty in this Territory. The day was when great herds of antelope roamed the plains and valleys lying to the east of the main range of mountains in New Mexico, but to-day they are scarce, comparatively few remaining. Those which may be found are located in eastern Valencia, Bernalillo, and Guadaloupe counties, while some have been seen as far north as Union County and as far south as Lincoln, Chaves, Eddy, Otero, Donna Ana, Grant, and Sierra counties.

On the plains and in the valleys can be found quail, pheasants, Mongolian or Chinese pheasants, prairie chickens, and during the seasons geese, brant, ducks, plover, curlews, and snipe.

In every stream of consequence in New Mexico is found the Rocky Mountain trout. A gamer fish never rose to a fly. The principal streams where this delicious fish may be caught are the Pecos, Chama, Brazos, Navajo, Rio Pueblo, Santa Clara, San Antonio, Jemez, Los Pinos, Bonito, Mora, Sapello, Manuelitas, Gallinas, and Ponil, mostly in the northern and middle portions of the Territory and also in all the mountain streams in western Socorro and Sierra counties in the south. In some of the streams of Lincoln and Chaves counties are found great quantities of black bass, of a kind, however, not so gamy as his brother of the lakes and rivers in the North.

It may be safely said that there is yet remaining in the United States proper no place where game is more abundant or true sport more obtainable than in New Mexico.

The Territory, wisely anticipating the results caused by the inroads which are constantly being made upon the game everywhere throughout the Union, have passed very stringent laws relative to the slaughter and selling of game. The legislature of 1897 passed a very comprehensive law, by the terms of which it is unlawful to kill or wound, insnare or trap any elk, deer, antelope, fawn, mountain sheep, ibex, Rocky Mountain goat, or beaver within the boundaries of New Mexico, except that antelope and deer with horns may be shot during the months of September, October, and November of each year in the northern counties, and during October, November, and December in the southern counties. It is likewise unlawful to kill, wound, or insnare any quail, grouse, prairie chicken, pheasant, partridge, or wild turkey, except that such birds may be shot with a gun only during the months of September to February. The open season for fishing begins with June and ends with October of each year. The penalties for violation of the acts of 1897 are very severe and comparatively easy of enforcement, the burden of proof being upon the person charged with violation of the provisions of the act. In no event can any game be exposed for sale which has been killed within the limits of the Territory, and the burden of proving that any game or fish has been killed outside of New Mexico, when exposed by butchers and dealers in the markets for sale, is upon the dealers and butchers; a very wise provision, as experience in prosecutions has demonstrated.

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A system of game wardens is established by the act; the wardens are appointed by the governor and they are clothed with the authority of making arrests, the same as the sheriffs of the several counties. The wardens hold their offices at the pleasure of the governor, and the executive is not restricted as to the number which he may appoint. Under this law the game of New Mexico is being thoroughly protected, not only for the benefit of our own citizens, but for any and all true sportsmen who may see fit to come here for a month's enjoyment of the hunting and fishing which is to be had in our mountains, mesas, plains, and streams.

A cordial invitation is extended to all of true sportsmen's instinct to a participation in the enjoyment of the sport of kings, with an assurance that the hand of welcome is always extended to those who come for the enjoyment and not to the abuse of the privilege.

The sportsmen visiting New Mexico need have no fear regarding accommodations, as proper conveyances can be secured at any point on the railroad by giving short notice, while at any of the principal towns he will find livery stables well supplied with teams and mountain wagons especially kept for the convenience of hunting and fishing parties, and who can furnish reliable drivers who are familiar with every desirable locality in their section of the Territory and whose charges are very reasonable.

RESOURCES.

The resources of New Mexico are boundless, and the possibilities of development in the Territory of New Mexico in numerous directions are unequaled by those of any other State or Territory in the Union. On account of the varied elevation almost everything that flourishes in the temperate zone, and many fruits that belong to the Tropics, grow to perfection in New Mexico. As a stock country it is excelled by none, in addition to which large, rich deposits of gold and silver, coal, iron, copper, sulphur, marble, building stone, and many different kinds of precious stones are found; New Mexico being the principal source of supply of the world for turquoise, which is of the finest quality and color. What we need to develop the mines, as well as the agricultural, stock growing, and other capabilities of our Territory is capital, and large fortunes are in store for those who have the money and industry to develop the wonderful resources of New Mexico. New Mexico needs more people; people who can invest in her mines and other industries which, if developed, would make our Territory one of the richest on the globe, and when the world at large becomes convinced of this, New Mexico will enter upon an era of prosperity never before dreamed of.

The ranges for sheep and cattle were never in better shape, and stock of all kinds is in excellent condition. The herds and flocks have increased in size and value very materially since the opening of the year, and with plenty of grass assured the sales of sheep and cattle this fall will bring large sums of ready money into the Territory.

Every prediction made for prosperity early in the year is now in a fair way to be fulfilled, and New Mexico will exceed almost all former yearly records in the amount of revenue derived from produce, sheep, and cattle at the close of the year's work.

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UNDEVELOPED RESOURCES.

The Territory of New Mexico is a most inviting field for capital and skilled labor, having undeveloped resources almost without limit. Millions of acres of the finest agricultual land are yet to be reclaimed by the development and proper storage of water. Communication by enlarged and cheaper railroad facilities between the various portions of the Territory is earnestly hoped for, that an interchange of home products between the mining and agricultural sections may be carried on.

A large extent of New Mexico's rich mineral lands yet remains to be explored and developed. Her grazing lands have not been fully used, owing to the failure to develop artesian water (of which the finest in the world is found here) and erect surface windmills, the opportunities and conditions for which are excellent.

The opportunities of industrial life offer varied and profitable inducements to capital and labor, and the agricultural, mineral, and grazing wealth should receive from outside investors the attention they deserve.

Factories might also be started with profit. In this Territory there are many plants and grasses of indigenous growth that could be used in the manufacture of paper, bagging, rope, etc. Some of the hard woods growing in this Territory, at the base of the mountains, when dry take a beautiful polish, which produces a veneering of excellent quality. Eastern manufacturers could be supplied with this article who now obtain their product from other countries. A full report is given elsewhere on the lumber and forestry of our Territory.

Respectfully submitted.

MIGUEL A. OTERO,
Governor of Territory of New Mexico.

SANTA FE, N. MEX., *September 20, 1899.*

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